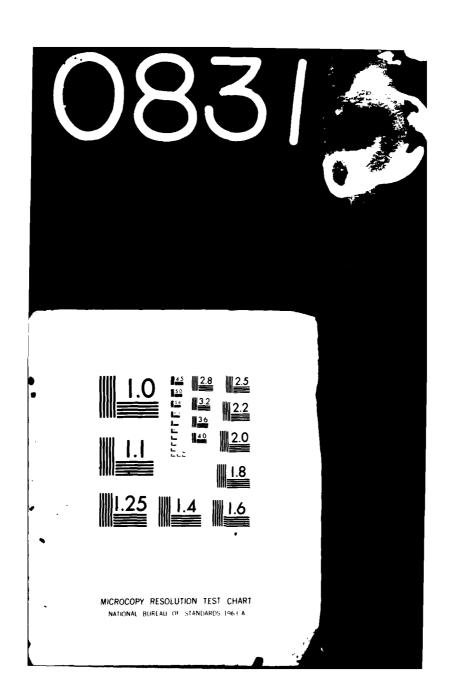
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DIVISIONAL ELECTRONIC WARFARE COMBAT (DEWCOM) MODEL

USER MANUAL

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1.0 INTRODUCTION

1.1 Modelling and Simulation

Most phenomena of the real world can, when taken individually, be described in the language of mathematics as a set of fixed relationships obeying the fundamental laws of nature or the more empirical approximations drawn from observation. For example, the distance travelled by a body moving at a fixed velocity can be expressed as "distance = velocity x time". Another statement of relationship might be the "radius of damage of a nuclear burst increases as the cube root of the yield". One can combine these two expressions to determine the amount of warning required by a person at desired ground zero (DGZ) of a nuclear device of given yield if he is to escape the blast by moving away from it at a given velocity. It is not necessary to actually explode weapons of various yields while people are driving away from DGZ at various speeds.

The development and use of a set of these abstract relationships to determine the outcome or the intermediate conditions of some collection of interacting real world phenomena is called "modelling", and the set itself is called a model. In the example above, if a number of weapons of various yields are exploded at various times and places over a large number of people in vehicles having different rates of speed, the computations become extremely tedious and complicated. The problem can best be resolved by transferring the computations to a large scale computer which does the arithmetic at lightening speed, and can keep track in its memory of all the events as they occur. This, then is called a "computerized model".

If, during the sequence of events in the above example, the drivers have opportunities to make choices depending upon their observation of the situation, these choices can be added to the model by inserting a set of logical rules into the list of instructions that the computer follows. For example, at any fork in the road, the vehicle takes that fork which leads most directly away from the most recent blast.

If there is a known probability that a particular weapon will not fire, then over a large number of weapons, the performance of each individual weapon can be determined by the throw of dice. Suppose the chance of failure is one out of six. If the dice comes up a six, for example, that weapon is said to fail. Such a procedure using random numbers instead of dice in the computer adds the capability of handling probabilistic processes in the model. Such a model is called a stochastic model.

A large and complex model, containing logic and probability, which runs on a computer from the initial conditions to completion without human intervention is usually called a simulation. This is a general term for the manipulation of the symbolic representation of a highly complex set of interacting events taking place over a period of time.

In order to simulate a particular real world activity, the mathematical expressions for the model must include all the factors significant to this activity and reflect faithfully their real life relationships. Moreover, in order that the model may be used more than once, these factors must be expressed so as to accept values of varying magnitudes for the many possible situations encountered in real world activity.

1.2 The DEWCOM Model

The DEWCOM Model is a two-sided stochastic combat simulation model which focuses upon tactical communications and electromagnetic intelligence/ threat acquisition systems and the electronic warfare (EW) directed against those systems. To accomplish this, the model is driven by conventional tactical engagement between a blue maneuver force against a red maneuver force. Each side consists of realistically deployed ground and close air support forces that include maneuver units, EW units, artillery units, and support units. The tactical war is driven by a set of orders that may direct units to attack, defend, move, delay, or withdraw. As units begin to take tactical actions, messages are triggered

which are transmitted over explicitly modeled communication links. The successful completion of these message transmissions is necessary for units to respond in the desired manner. Intelligence is gathered through direct observation of units in contact, radars, and from messages that flow between units. Increases in intelligence can in turn cause messages to be generated which may be sensed or acted upon. As messages are being transmitted over the communications facilities of one side, they are subject to being sensed by the opposing side. Several possible actions may be taken by a side upon becoming aware of the messages of the other side. The messages may be jammed, intercepted, the originator may be located, or no action at all may be taken. Intercepting messages or locating enemy transmitters increases a unit's level of intelligence of the opposing force. The model is run as a pure simulation for about 8 to 12 simulated combat hours.

The DEWCOM Model provides for user entry of data describing a number of factors affecting the outcome of combat, including such things as:

- Combat organization
- Communications organization
- Equipment
- Terrain
- Orders

The model can produce two sets of reports, individually selectable by the user at run time. The first set consists of formatted listings of input data as submitted by the user, one report for each major category of data. The second set consists of results of the simulation based on the input data and the internal logic of the model. In addition, the model generates an output file from which the user can prepare adhoc reports as required.

2.0 THE DEWCOM MODEL

2.1 Description

2.1.1 Design Characteristics

The DEWCOM Model is designed to simulate the concepts used in tactical combat, including communications-electronics and electronic warfare (EW). The model permits the analysis of communications, radars, and EW systems. The following features are incorporated in the model:

- Provision for two-sided tactical warfare with flexibility in force structure, organization, and doctrine. Through changes in model input, essentially any mix of echelons of combat forces can be simulated (e.g., Battalion to individual items of equipment, or Corps to Company, or Echelons above Corps to Brigade/Battalion). Limiting factors to what can be represented are computer size and/ or model running time; such limitations may potentially be offset by simulation of a slice of the echelons to be studied.
- Realistic message processing, with the ability to depict non-degradable and degradable communications independently for either side.
- Two terrain models, one of which is the basis for lineof-sight (LOS) calculations and the other for mobility and combat attrition routines.
- Flexible artillery algorithms which allow indirect fire artillery missions as well as direct fire missions.

- Description of weapon destructive effects and attrition as a function of target class, range, posture, and other variables.
- The ability to represent command and control capabilities.
- Provision for units to change posture during the course of the battle.
- Provision for units to have a succession of tactical objectives.
- Unit movement and provision for interruption or changes in unit movement based on intelligence and force ratios.
- Provision for two-sided electronic warfare functions of jamming, intercepting, and direction finding.
- Display of radar and communications transmitters as tactical signal emitters.
- The capability to reflect ground-to-air and air-to-ground data links and jammers.
- The capability to utilize communications intelligence.
- Direction finding (DF), including the capability to discriminate between long and short range DF for both intelligence implications as well as artillery targeting.
- Close air support, including rotary wing and fixed wing aircraft. Sortie attrition and failure rates are included.

 Provision for intelligence gathering and dissemination.

2.1.2 General DEWCOM Structure

The overall DEWCOM methodology is reflected on the following elements:

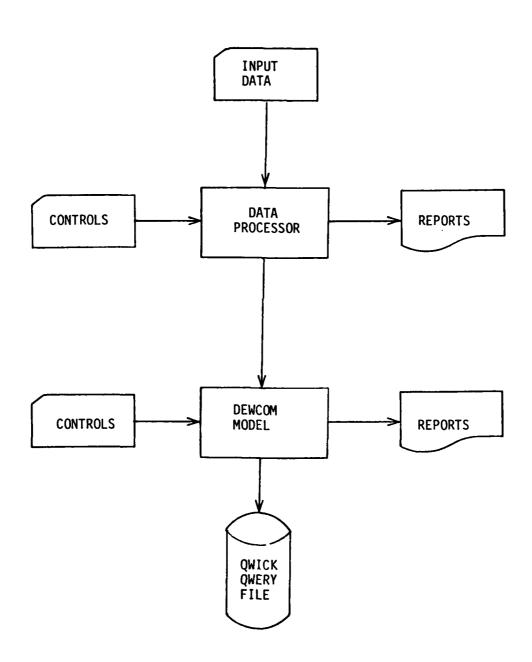
- The input data, introduced by the user, containing all the variable data concerning such factors as organization, equipment, communications, terrain, etc. to be modelled.
- The data processor and its user-specified controls, which build the data set that drives the DEWCOM Model itself. The data processor performs certain input data verification functions by subjecting the data to reasonableness checks, builds the internal data structure from the user input, and produces reports based on the contents of the input data.
- The DEWCOM Model itself, consisting of a large number of computer routines organized into several modules which simulate the passage of time and the multitude of interrelated processes occurring during the combat period. The model produces user-specified standard output reports and an output file from which the user can generate desired ad hoc reports.

2.2 Methodology

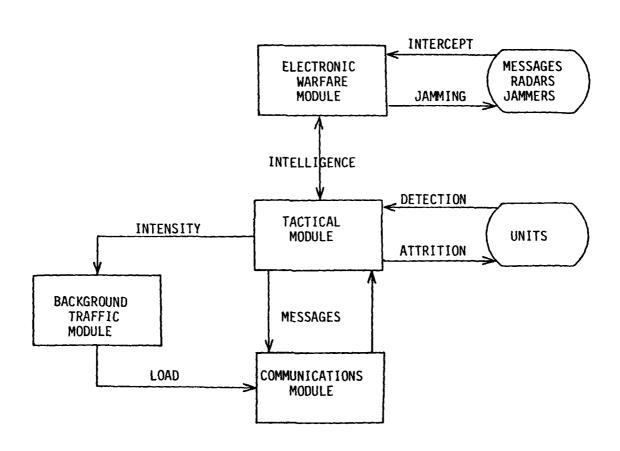
2.2.1 Modules and Their General Functions

The DEWCOM model consists of several interrelated modules, as depicted on the diagram facing page 7. The major functions of each module are as follow:

DEWCOM METHODOLOGY



DEWCOM
MODEL STRUCTURE



2.2.1.1 The Tactical Module

- o Maneuvers units on the battleground;
- o Processes orders for each unit;
- o Fires weapons at opposing units and causes losses of personnel and equipment;
- Causes explicit messages to be transmitted;
- o Maintains command structure;
- o Collects intelligence from sources other than radar.

2.2.1.2 The Communications Module

- o Processes and routes messages;
- o Maintains status of communications facilities;
- o Maintains communications structures.

2.2.1.3 The Electronic Warfare Module

- o Intercepts enemy messages and radar transmissions;
- o Performs direction finding;
- o Jams enemy communications;
- Performs communications intelligence;
- o Performs electronic intelligence.

2.2.1.4 The Background Traffic Module

- o Reflects message traffic implicitly;
- o Responds to tactical situations in volume of traffic.

2.2.2 How the Model Works

A main program provides central control for execution of the DEWCOM Model. The four modules mentioned above include many

complex computer programs which represent specific activities or conditions occurring in the combat situation, as described below:

- Unit Movement is controlled by tactical orders. Three types of orders (attack, move, withdraw) cause a unit to move. The unit moves until the desired distance is covered, and then it executes a new tactical order. Movement is by a distance rather than time increment. An input value controls the frequency with which a unit's position is updated.
- o <u>Direct fire attrition</u> is an aggregated "force on force" approach. As units are moved, they may come into contact with opposing units, causing attrition upon each other. Reduction in strength is a function of terrain, range, force ratio, and weapons. The loss of strength by a unit can cause a change in tactical orders. For example, a unit may change posture from "defend" to "withdraw". Such a change could separate the opposing forces and cause direct fire attrition to stop.
- o <u>Indirect fire attrition</u> is only applied when messages requesting such fire are received by the firing units. The routing of the message is determined by input data. Units generate requests for fire; the requests are communicated to firing units; and the missions are fired.
- Close air support may be requested by message sent by units to the headquarters controlling air resources. If the message succeeds, an air mission is ordered. If the communications fail because of jamming, the close air support mission is not initiated. For missions requiring ground coordination (user input) a subsequent message must succeed between a ground station and the aircraft before attrition can be applied.

- o <u>Command and Control</u> is simulated in terms of orders and messages. As actions occur, messages are generated (based on input data) to direct units to take actions.
- Message processing is one of the most complex tasks performed by the model. This task takes the messages that are generated and routes them to the destination via links and nets defined by the input data. Message processing includes the delays that may occur for encrypting and decrypting, as well as those encountered when all available links are busy.
- <u>Electronic Warfare (EW)</u> actions (direction finding, jamming, and interception) are all directed by a set of EW orders described by input data. Direction finding and intercepting result in an increase in intelligence about the opposing side. Jamming results in the enemy being denied use of communications resources.
- Intelligence collection becomes the basis for many decisions in the model. Intelligence is gathered directly by units in contact with one another, direction finding, message intercepting, and radar. It is gathered indirectly from messages that flow between units. Artillery fire can be ordered as a result of increased intelligence, and attrition on one side changes in accordance with the amount of knowledge about that side by the opposing side.
- o <u>Implicit message</u> functions are modelled since it is virtually impossible (and in most cases, not desirable) to model every individual message that is transmitted among the units in the simulation. For example, the delay time encountered by messages in the communications system may be increased as the amount of tactical activity increases.

- Radar of two kinds is simulated in the model: counterbattery and detection. Counterbattery radar reacts to artillery fire and can gain intelligence about the firing unit. The detection radar gathers intelligence about the opposing units within range and line of sight.
- Terrain is taken into account by the use of two terrain models. The first describes each grid square of the terrain with parameters affecting movement rates. The second (STAR terrain model) determines the presence of optical line of sight between any two points on the battlefield. This routine is employed for direct fire combat to determine if units can engage opposing units. The routine is also employed to determine radio line of sight. The signal loss for electronic transmission is based on the existence (or absence) of visual line of sight.

2.2.3 Model Operating Features

The model can be stopped, have data changed, and restart at the point it stopped. This permits changing tactics in the middle of a battle. It also allows the data that describes weapon performance to be changed. The change of tactics might be employed to model a commander declaring radio silence at some time. The change of the weapons data could be used to model a change in the environment such as the employment of smoke.

2.3 Limitations and Assumptions

For the purpose of developing the DEWCOM Model, certain size considerations came into play. In general, the number of communications nets increases with the size of the echelon. The information which follows concerning communications arrays and nets for U.S. and potential threat forces was used as a guide in the DEWCOM design to permit sizing the model. Since future systems which might require modelling may be structured in a much different manner, a certain degree of flexibility in the manner in which nets are depicted is incorporated in the model.

2.3.1 U.S. Forces

The following table is a depiction of the systems one might expect to encounter in a typical U.S. Corps. Representation of a Joint Tactical Information Distribution System (JTIDS) may well constitute an upper bound on the complexity of future communication systems to be addressed in the DEWCOM model. Application of packet radios and JTIDS systems within the tactical arena have not yet been specifically defined, so a generalized approach was taken in structuring the communications data base for the model.

ECHELON & NUMBER	"FT FUNCTION NUMB	ER OF NETS	AVERAGE NUMBER OF MEMBERS
CORPS	Command	3	8
	Fire Command	3	8
	Intelligence Disseminati	on 3	6
	Intelligence Collection	3	5
	Other (e.g., Air Req.)	3	6
DIVISION	Command	3	8
(1)	Fire Direction	5	6
	Intelligence Disseminati	on 3	6
	Intelligence Collection	9	4
	Other (e.g., Air Req.)	4	3
BRIGADE	Command	2	6
(3)	Fire Direction	2	4
	Intelligence Disseminati	on 2	4
	Intelligence Collection	3	12
	0ther	2	8

BATTALION	Command	2	6
(11-14)	Fire Direction	1	4
	Intelligence	1	6
	Other	1	3
COMPANY	Command	2	4
(44-56)	Fire Direction	1	3
	Other	1	3
ADJAC ENT	Command	2	2
DIVISION	Fire Direction	2	3
(2)			
ADJAC ENT	Command	2	2
BRIGADE (2)	Fire Direction	2	2

2.3.2 Threat Forces

The following is a listing of net types one might encounter in a threat force. They are listed by echelon.

ECHELON & NUMBER	NET FUNCTION	NUMBER OF NETS	AVERAGE NUMBER OF MEMBERS
FRONT	Command	3	6
	Fire Direction	2	12
	Intelligence	6	8
	Other	5	8
ARMY	Command	8	6
	Fire Direction	38	4
	Intelligence	4	4
	Reconnaissance	2	4
	Other .	4	6

DIVISION	Command	7	6
(7)	Fire Direction	31	5
	Intelligence	2	4
	Reconnaissance	6	3
	Other	4	8
REG IMENT	Command	3	16
(28)	Fire Direction	2	5
	Intelligence	1	4
	Reconnaissance	1	5
	0ther	2	10
BATTALION	Command	2	28
(84)	Fire Direction	1	6
	Intelligence	1	6
	Reconnaissance	1	6
	Other	1	3
COMPANY	Command	1	10
(36)	Fire Direction	1	4
	Other	1	4

2.3.3 Electronic Warfare (EW) Assets

Notional electronic warfare assets are as indicated below. The same number of systems and system types are presumed to be available to comparable U.S. and threat force units.

2.3.3.1 Signal Intercept Regiment (Front)

<u>Unit</u>	<u>Equipment</u>				
Radio Intercept Battalion	72 Communications Intercept Sets				
Radio DF Battalion	48 Communications Location Sets				
Radar Intercept & DF Bat- talion	30 Non-communications Intercept & Location Sets				

2.3.3.2 Radio Electronic Support Battalion (Front & Army)

Unit	Equipment
Radio Company (3)	12 Communications Intercept Sets
	12 Communications Intercept & DF Sets
	36 Communications Jammers
	9 Multi-channel Jammers
Radar Company	11 Non-communications Jammers
	<pre>10 Non-communications Intercept & DF Sets</pre>

2.3.3.3 Signal Intercept Battalion (Army)

Unit	Equipment
Radio Intercept Company	28 Communications Intercept Sets
Radio DF Company	16 Communication Location Sets
Radar Intercept & DF Company	15 Non-communications Intercept & DF Sets

3.0 INPUT DATA

3.1 General Description

The DEWCOM Model is driven by data supplied by the user, describing the characteristics and conditions of the forces involved in the simulated combat. The input data use English-like keywords, making them more meaningful and manageable when being prepared, modified, and verified. The data are structured for minimal repetition. For example, it is necessary to enter the characteristics of a radio only once rather than for every unit that has one. Built into the model are verification checks which look for "reasonableness" of the data. For example, probability values should be in the range of zero to one. The model does not stop when an "out of bounds" value occurs, but issues a warning notice to the user and continues.

3.2 User Control

The control available to the user of the DEWCOM Model is detailed, since the data to run the model is input rather than imbedded in the code. This control ranges from the selection of the data to run the model to the selection of reports to be generated from the model. User ability to direct the forces for either side through input is extremely flexible. The following sections provide a description of the data to operate the model.

3.3 Input Data Organization

Input data are organized into the following major categories:

- o Concrols
- o Terrain
- o Equipment
- o Type Units
- o Combat Organization
- o Communications Organization
- o Orders

The first category (Controls) is concerned with the general overall operation of the model. Through it, the user identifies reports to be produced from the simulation, lists variables which do not apply exclusively to one side or the other, and otherwise establishes the general parameters for a particular "run" of the model.

The remaining six categories describe specific characteristics, capabilities, and conditions of the opposing forces being modelled, such as units, weapons, organization, combat posture, tactics, etc. and the terrain on which the simulated combat takes place. The basic building block for the forces in the model is the unit. Each unit is given a data structure so that any unit found in military organizations can be described. In this manner, it is possible to describe forces to the resolution of platoons, companies, or battalions. Units are organized in a "tree" structure to allow complete freedom in describing the command structure.

3.4 <u>Input Data Conventions</u>

Unless otherwise specified, all seven categories of data are required for operation of the model, and they must be input in the sequence shown in the preceding paragraph (i.e., Controls, Terrain, Equipment, Type Units, Combat Organizations, Communications Organization, and Orders). The following rules or conventions govern the input data:

- o Major categories and subcategories of data are preceded by an appropriate identifying keyword and are terminated by the keyword "HALT". All keywords shown in these instructions (and the terminating keyword "HALT") must be included in the input stream, even if no data for a particular category or subcategory is being input for a given run.
- o Although the SIMSCRIPT free-form "read" statement is used in this model, allowing considerable latitude in the formatting of input data, the specific formats and spacing

shown in these instructions are strongly recommended in order to more clearly illustrate the data structure and relationships and to facilitate visual checking by the analyst.

- When a zero value for a variable or field is intended, the zero (0) must be explicitly input (as opposed to leaving the field blank).
- Unless otherwise stated, numeric data should be right-justified in a field (with leading blanks, if appropriate) and alphabetic data should be left-justified (with trailing blanks).
- o Since input may be through punch cards as well as other media, each line (may also be referred to as a record) is limited to 80 characters of data (including blanks).

3.5 <u>Input Data Preparation Forms</u>

The second secon

Special forms have been designed to simplify the coding of data for input to the DEWCOM Model. Roman numerals are used to identify the order of major data categories (Controls, Terrain, Equipment, etc.) while Arabic numerals reflect the sequence of forms within a major category. Subcategories of data contained on a given form are listed adjacent to the sequence number. The numbering of forms by and within major data category permit them to be readily maintained in the proper entry sequence. Where necessary, multiple copies of a specific form can be used by lining out inapplicable key words and data fields. Details are contained in the instructions relating to each specific form.

The DEWCOM Model input data preparation forms are listed below. Each item identifies one specific form with its major data category (shown in all capital letters following a Roman numeral), its sequence within major category (Arabic numeral under major category), and data subcategories for which it is used (following Arabic numeral).

- o I. CONTROLS
 - Global Variables Data Reports
- o I. CONTROLS
 - 2. Side Attribute Data
- o II. TERRAIN
 - 1. Mobility Data
- o II. TERRAIN
 - 2. Obstacle Data
- o II. TERRAIN
 - 3. Base Height Data
- o II. TERRAIN
 - 4. Hill Data
- o II. TERRAIN
 - 5. Hill List Data
- o II. TERRAIN
 - 6. Cover Data
- o III. EQUIPMENT
 - Damage Class Data Communication Equipment Data
- o III. EQUIPMENT
 - 2. EW Equipment Data
- o III. EQUIPMENT
 - 3. Weapon Data

- o III. EQUIPMENT
 - 4. Type Sortie Data
- o IV. TYPE UNITS
 - Unit Attribute Data
 Communication Equipment Owned Data
- o IV. TYPE UNITS
 - EW Equipment Owned Data Weapon Owned Data
- o IV. TYPE UNITS
 - Attrition Data
 Desirability of Firing Data
 Sector Width Data
 Performance Degradation Factor Data
- V. COMBAT ORGANIZATION
 - 1. Unit Data
- o V. COMBAT ORGANIZATION
 - 2. Air Sortie Data
- VI. COMMUNICATIONS ORGANIZATION
 - 1. Nets and Links
- VI. COMMUNICATIONS ORGANIZATION
 - 2. Compound Links
- o VII. ORDERS
 - 1. Communication Orders
- o VII. ORDERS
 - 2. EW Orders
- o VII. ORDERS
 - 3. Tactical Orders

o VII. ORDERS

4. Posture

3.6 <u>Input Data Preparation Instructions</u>

Detailed instructions for completion of the input data preparation forms follow. A foldout of a completed sample of each form follows each subparagraph containing instructions governing its data fields.

All required key words are preprinted in bold block letters in the appropriate columns. Key words are shown in their proper relationship to other key words and data fields. These relationships must be maintained in the input data stream.

In some instances, brief instructions for entries in the fields are contained on the form itself, adjacent to the space for the data. Areas of each form which are not to be used for data are shaded.

Where deemed necessary, a reference number or "key" is used to relate data fields on the form to the specific associated instructions. Key numbers are encircled and shown over or adjacent to a specific field, or preceeding a line on the form.

The general format for detailed instructions is as follows:

Key: (When applicable; an Arabic numeral.)

Name: (The internal DEWCOM Model name for the data field or vari-

able; all capital letters separated by dots, if appro-

priate; no embedded blank spaces.)

Spaces: (The maximum number of characters of data which may be

entered.)

Columns: (The horizontally numbered spaces on the form in which the

data are entered.)

Entries: (When applicable; a listing of the entries or types(s) of

entries permitted or required in the field.)

Description: (When necessary; an explanation of the data field or vari-

able, significance of entries, restrictions, etc.)

3.6.1 Form I.1 (CONTROLS; Global Variables Data, Reports Data)

This form contains data which control certain overall aspects of the model. It is used to specify whether or not a simulation is to be run, which reports are to be produced, and the values of certain "Global Variables" (those variables which do not apply exclusively to one side or the other). A foldout sample of this form is located on page 27.

Key:

1

Name:

SIMULATION

Spaces:

3

Columns:

14-16

Entries:

YES or NO

Description:

Used to specify whether or not the simulation is to be run. An entry of NO will cause the model to read in and verify the data, and then stop. An entry of YES will cause the

model to read in and verify the data and, if no input errors

occurred, to start the simulation.

Key:

2

Name:

BACKGROUND. TRAFFIC. UPDATE. TIME

Spaces:

5

Columns:

5-9

Entries:

Integer minutes

Description:

The interval at which message processing delays due to the

background traffic are computed.

.

Key:

3

Name:

DT.V

Spaces:

5

Columns:

11-15

Entries:

Description:

The current version of the model does not input this vari-

able. It should be left blank.

Key:

4

Name:

MAX.LINKS.IN.CIRCUIT

Spaces:

5

Columns:

17-21

Entries:

Integer

Description

The maximum number of links which may be concatenated to

connect two units in a circuit.

Key:

5

Name:

MAX.PERMITTED.ERRORS

The state of the s

Space:

5

Columns:

23-27

Entries:

Integer

Description:

The maximum number of errors detected before the model ter

minates.

Key:

6

Name:

MAX.STEP

Spaces:

5

Columns:

29-33

Entries:

Description:

The maximum time in minutes which may pass before the

strengths of the units are updated.

Key:

7

Name:

MIN. STEP

Spaces:

5

Columns:

35-39

Entries:

Description:

The minimum time in minutes after which the strengths of

the units are updated.

Key:

8

Name:

MOVE.STEP.SIZE

Spaces:

5

Columns:

41-45

Entries:

Integer

Description:

Describes the distance that a unit travels before the loca-

tion coordinates are updated, expressed in meters.

Key:

9

Name:

RATE.OF.CONTACT

Spaces:

5

Columns:

47-51

Entries:

Integer between 0 and 100 (inclusive)

Description:

Expresses the rate at which a unit in contact gathers

intelligence about the opposing unit. The value entered

reflects a rate per minute.

10

Name:

RN. STREAM

Spaces:

5

Columns:

5-9

Entries:

Integer, 1 through 10

Description:

Identifies which of the 10 available random number streams

is to be used by the model.

Key:

11

Name:

STOP. TIME

Spaces:

5

Columns:

11-15

Entries:

None

Description:

The current version of the model does not use this variable.

It should be left blank.

Key:

12

Name:

MIN. DELAY

Spaces:

5

Columns:

17-21

Entries:

Integer minutes

Description:

The minimum time required to process a message before

transmission. This value is used when no units are in

contact with the enemy.

Key:

13

Name:

MAX.DELAY

Spaces:

5

Columns:

23-27

Entries:

Integer minutes

Description:

The maximum time required to process a message before $\ensuremath{\mathsf{T}}$

transmission. This value is used when all units are in

contact with the enemy.

14

Name:

REPORT. FREQUENCY

Spaces:

5

Columns:

29-33

Entries:

Integer minutes

Description:

The frequency in simulated time at which requested reports

are produced.

Key:

15

Name:

TIME.EOS

Spaces:

5

Columns:

35-39

Entries:

Decimal or integer hours

Description:

Specifies the length of time the simulation is to run,

expressed in hours. Fractions of hours, if used, are ex-

pressed in decimal form (e.g., 12.5).

Key:

16

Name:

CHAR. PER. WORD

Spaces:

5

Columns:

41-45

Entries:

Integer

Description:

The number of characters which can be stored in one word of

the computer system on which the model is to be operated.

Key:

17

Name:

MESSENGER.RATE

Spaces:

5

Columns:

47-51

Entries:

Integer

Description:

The rate at which a messenger travels, expressed in meters

per minute.

A Shaker was a state of the

18

Name:

DATA (reports)

Spaces:

1 each

Columns:

10-22

Entries:

Digits 1 through 7 or NONE

Description:

Specifies the input data reports desired. Each report is a formatted listing corresponding to the actual data input to

a specific run. Input data reports are:

1 - Controls

2 - Terrain

3 - Equipment

4 - Type Units

5 - Combat Organization

6 - Communications Organization

7 - Orders

If NO reports are desired, enter NONE in the first 4 spaces.

Key:

19

Name:

MODEL (reports)

Spaces:

1 each

Columns:

11-23

Entries:

Digits 1 through 7 or NONE

Description:

Specifies the output reports to be produced from this run

of the simulation. Output reports are:

1 - Unit Status

2 - Link Status

3 - Message Status

4 - Attrition Summary

5 - EW Status

6 - Equipment Status

7 - Intelligence Log Status

If no model reports are desired, enter NONE in the first 4

spaces.

DEWCOM MO PREPARED BY _____ INPUT DATA PREPARATIO ONTROLS MULA ON or NO E ОВ **(5**) **(6**) íÌì 10 (12) 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 HALT TERMINATES GLOBAL REPORTS

to

5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 16 37 38 39 40 41 42 43 44 45 4

TERMINATES REPORT DESIGNATION DATA

DATA

MODE

48

(19)

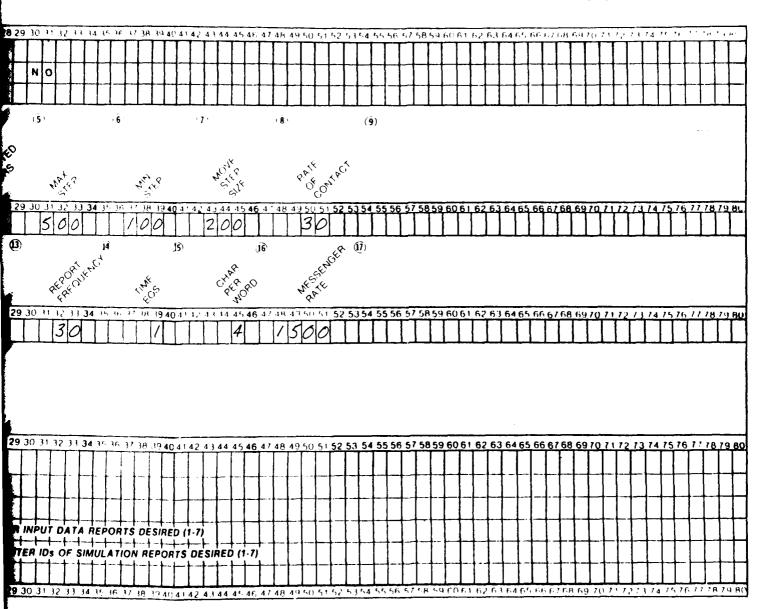
$D \wedge$	GF	OE.	
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DEWCOM MODEL

INPUT DATA PREPARATION FORM

I. CONTROLS

1 GLOBAL VARIABLES DATA REPORTS DATA





3.6.2 Form I.2 (CONTROLS; Side Attributes Data)

This form continues CONTROL input data, which specify certain overall characteristics of units in the simulation. It is used to identify attributes which apply to all units on each side (BLUE and RED). The form contains spaces for two separate sets of the attributes (one for each side), delimited by the preprinted side name (BLUE or RED) and corresponding HALTS. This permits independent identification of the attributes for each side. A foldout sample of this form is located on page 35.

Key:

1

Name:

SD. ENCRYPTION. INTELLIGENCE

Spaces:

5

Columns:

7-11

Entries:

NUMER IC

Description:

A multiplier which modifies the intelligence value of

an intercepted encrypted message.

Key:

2

Name:

SD. EW. INTEL. THRESHOLD

Spaces:

5

Columns:

13-17

Entries:

Integer in the range 0-100

Description:

A threshold above which the opposing force net type changes

from UNKNOWN to a known type.

3

Name:

SD. SUPPORT. THRESHOLD

Spaces:

5

Columns:

19-15

Entries:

Integer

Description:

The target stength threshold, above which an artillery unit which cannot provide requested artillery support requests

such support from another fire direction center.

Key:

4

Name:

SD.FIRE.SUPPORT.THRESHOLD

Spaces:

5

Columns:

25-29

Entries:

Integer

Description:

The target strength threshold, above which a unit from which artillery support has been requested, in turn asks for additional artillery support from another fire direc-

tion center.

Key:

5

Name:

SD.COORDINATION. INTERVAL

Spaces:

5

Columns:

31 - 35

Entries:

Integer or decimal

Description:

The time interval in minutes separating messages

between any two units on a side.

Typical values would be in the range of 5 to 15 minutes.

6

Name:

SD.MIN.UNIT.STRENGTH

Spaces:

5

Columns:

37-41

Entries:

Integer in the range 0 to 100

Description:

A percentage value, representing a percent of normal unit strength, below which a unit ceases to be a factor in the

simulation.

Key:

7

Name:

SD.ARTY.RESET.TIME

Spaces:

5

Columns:

43-47

Entries:

Integer

Description:

The minimum time interval after firing in minutes

required for an artillery unit to accept a new target.

Key:

8

Name:

SD.ARTY.CONTACT.RANGE

Spaces:

5

Columns:

49-53

Entries:

None

Description:

The current version of the model does not use this vari-

able. It should be left blank.

9

Name:

SD.MIN.ARTY.DISTANCE

Spaces:

5

Columns:

55-59

Entries:

Integer

Description:

The threshold distance in meters between an artillery unit

and the FEBA, below which the artillery unit moves away

from the FEBA.

Key:

10

Name:

SD.MAX.ARTY.DISTANCE

Spaces:

5

Columns:

7-11

Entries:

Integer

Description:

The threshold distance in meters between an artillery unit

and the FEBA, above which the artillery unit moves toward

the FEBA.

Key:

11

Name:

SD.MIN.EW.DISTANCE

Spaces:

5

Columns:

13-17

Entries:

Integer

Description:

The threshold distance in meters between an EW unit and the

FEBA, below which the EW unit moves away from the FEBA.

12

Name:

SD.MAX.EW.DISTANCE

Spaces:

5

Columns:

19-23

Entries:

Integer

Description:

The threshold distance in meters between an EW unit and the

FEBA, above which the EW unit moves toward the FEBA.

Key:

13

Name:

SD.WIRE.FAILURE.RATE

Spaces:

5

Columns:

25-29

Entries:

Integer

Description:

The mean time between failures (in hours) of a wire link.

Key:

14

Name:

SD.WIRE.MTTR

Spaces:

5

Columns:

31-35

Entries:

Integer

Description:

The mean time to repair a wire link (in hours).

Key:

15

Name:

SD.DF.RATE.1.UNIT.OUT

Spaces:

5

Columns:

37-41

Entires:

Integer

Description:

The decreased intelligence gathering capability of a DF

unit when one of its DF sites becomes inoperable, expressed as a percentage of its capability when all sites are opera-

tional.

A Superior of the same of the

16

Name:

SD.DF.RATE.2.UNITS.OUT

Spaces:

5

Columns:

43-47

Entries:

Integer

Description:

The decreased intelligence gathering capability of a DF unit when two of its DF sites become inoperable, expressed as a percentage of its capability when all sites are opera-

tional.

Key:

17

Name:

SD.PCT.OVER.TRUE.STRENGTH

Spaces:

5

Column:

49-53

Entries:

Integer

Description:

A modifier reflecting the maximum percentage $\underline{\text{over}}$ its nor

mal strength that an opposing unit's strength will be per-

ceived by a unit on this side.

Key:

18

Name:

SD. PCT. UNDER. TRUE. STRENGTH

Spaces:

5

Columns:

55-59

Entries:

Integer

Description:

A modifier reflecting the maximum percentage $\underline{\text{under}}$ its nor

mal strength that an opposing unit's strength will be per-

ceived by a unit on this side.

PREPARED BY	<u> </u>	DEWCOM	MODE
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HALT TERMINATES CONTROL	DATA	┤┤┤┤┤┤ ┼┼	
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DEWCOM MODEL

PAGE _____ OF ____

I. CONTROLS

INPUT DATA PREPARATION FORM

2. SIDE ATTRIBUTE DATA

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3.6.3 Form II.1 (TERRAIN; Mobility Data)

This is the first of several forms used to describe the terrain on which the simulated encounter occurs. It is used to identify characteristics of the terrain affecting mobility of units. Map coordinates referred to are Universal Transverse Mercator (UTM) coordinates. Each pair (X and Y) of the 6 digit UTM coordinates refers to the lower left corner of a specific grid square on the map. Foldout samples of this form are located on pages 41 and 43.

Key:

1

Name:

SIZE

Spaces:

3 for each direction

Columns:

8-10 and 12-14

Entries:

Integer

Description:

This entry helps describe the dimensions of the map. The first field (column 8-10) identifies the number of grid squares on the map in the X (horizontal) direction being used for the simulation. The second field (column 12-14) identifies the number of grid squares in the Y (vertical)

direction being used.

Key:

2

Name:

GRID. SIZE

Spaces:

5

Columns:

13-17

Entries:

Integer

Description:

Defines the distance represented by the length of a side of

one grid square of the map, expressed in meters.

3

Name:

ORIGIN

Spaces:

6 for each of two entries

Entries:

Integer

Column:

10-15 and 17-22

Description:

Identifies the UTM coordinates of the lower left corner of the map. The first entry (column 10-15) contains the last six digits of the X coordinate of the map origin (X. ORIGIN) and the second (columns 17-22) contains the Y coordinate (Y.ORIGIN). The grid square identified by these coordinates is grid square Ø (zero) for purposes of the

simulation.

Key:

4

Name:

MOBILITY

Spaces:

Grid Coordinate - 6

Mobility Index - 1 each

Columns:

Grid Coordinate - 5-10

Mobility Index - 13, 16, 19,...70

Entries:

Grid Coordinate - 6 digits

Mobility Index - 1, 2, 3, 4, or 5

Description:

Describes characteristics of the terrain affecting mobility. A one digit index (MOBILITY INDEX) is assigned to each grid square on the map, identifying its mobility characteristics:

Index

Characteristics

- 1. Generally flat, open terrain with good maneuvering; may or may not have roads.
- 2. Moderately open, rolling terrain; good maneuverability.

- Moderately closed terrain, one-third to one-half covered by heavy woods or steep grades. Tank movement restricted.
- 4. Close terrain; tank movement limited.
- Rugged terrain. Tank movement limited to reconnoitered routes; engineer assistance necessary.

Mobility index values are grouped by Y coordinate, beginning at the origin (lower left corner) of the map and working upward (increasing Y coordinate values).

Enter the six digit Y coordinate of the grid square in columns 5-10. Follow this with the Mobility Index value for each grid square (from left to right) along the X axis having that Y coordinate.

Enter one index value for every grid square along the X axis (as many as were shown in the X direction for field name SIZE, Key #1, column 8-10). If there are more than 20 grid squares in the X direction, continue the index values on the next line(s) until the proper number have been entered. DO NOT enter the Y coordinate (column 5-10) for second and succeeding lines relating to the same Y coordinate.

Continue the entries for as many Y coordinates as were reflected for field name SIZE (Key #1, column 12-14).

If there are more entries than will fit on a form, continue as follows:

- Line out the keyword HALT at the bottom of the full sheet.
- 2. Using another sheet, line out the keywords TERRAIN, SIZE, GRID.SIZE, ORIGIN, and MOBILITY, and the blank fields on the same lines as those keywords.

....

- 3. Continue entries in the body of the form in the same manner as the preceding page. If mobility index values for a Y coordinate must be continued on another page, DO NOT reenter the Y coordinate (columns 5-10) on the continuation page.
- 4. Do not line out the keyword "HALT" at the bottom of the last form used.

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DEWCOM MOD

INPUT DATA PREPARATION

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II. TERRAIN

1 MOBILITY DATA

DEWCOM MODEL

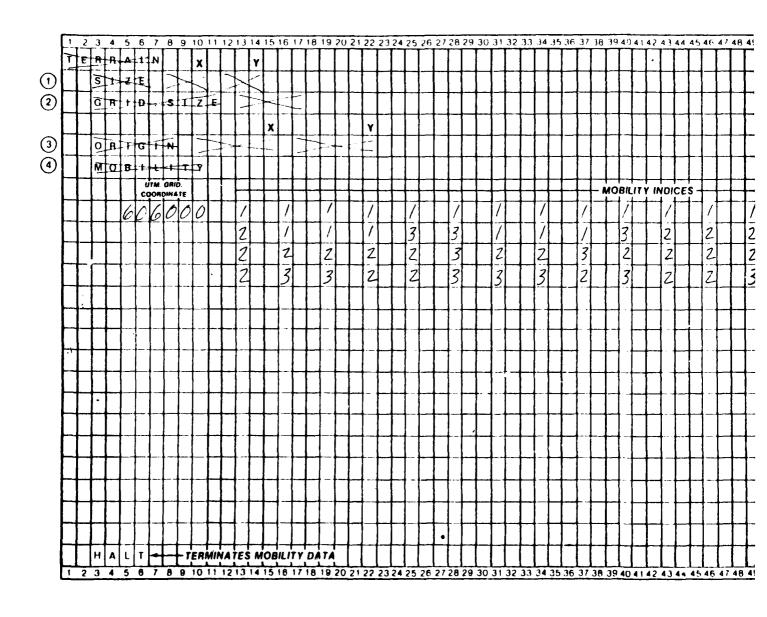
INPUT DATA PREPARATION FORM

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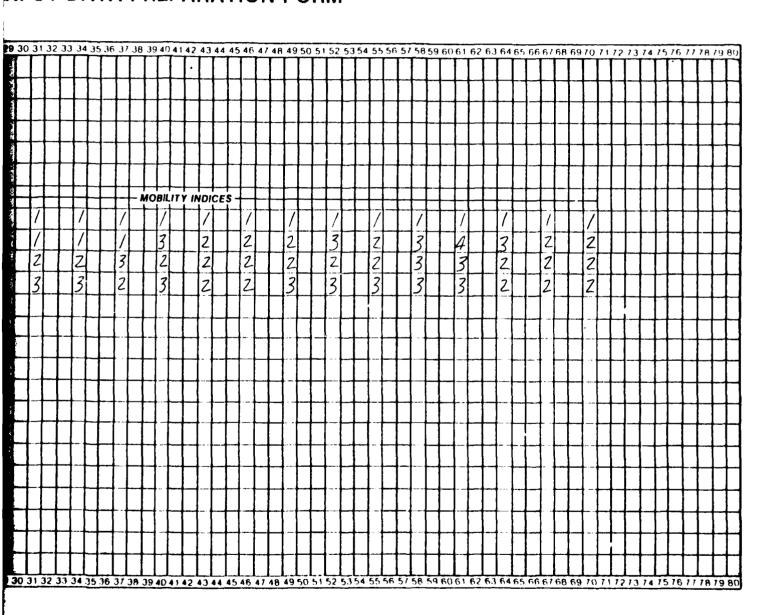


II. TERRAIN

1. MOBILITY DATA

DEWCOM MODEL

NPUT DATA PREPARATION FORM



3.6.4 Form II.2 (TERRAIN; Obstacle Data)

This form continues the description of the terrain selected for the simulation. It identifies the severity and extent of the terrain obstacles present in each grid square. Foldout samples of this form are located on pages 47 and 49.

Key:

1

Name:

OBSTACLE

Spaces:

Grid Coordinate - 6

Obstacle Index - 2 each

Columns:

Grid Coordinate - 5-10

Obstacle Index - 12-13, 15-16, 18-19, ...69-70

Entries:

Grid Coordinate - 6 digits

Obstacle Index - Integer

Description:

A two digit index (OBSTACLES.INDEX) ranging from 0 to 50 is assigned to each grid square on the map, describing its characteristics in terms of obstacles present. Examples of obstacle index values which might be assigned are as follow:

Obstacle	Maximum Value		grid squ	are aff	
<u>Obstacle</u>	value	1/4	1/2	3/4	<u>Fu 11</u>
Marsh	50	12	25	37	50
Stream-fordable	25	06	12	18	25
Stream-bridge	37	09	18	28	37
Defile	12	03	06	09	12
Woods	37	09	18	28	37

NOTE THAT THESE ARE EXAMPLES ONLY.

Obstacle index values are grouped by Y coordinate in a manner similar to the Mobility indices described in the preceding subsection (3.6.3). Beginning at the origin, enter the Y coordinate of the grid square in columns 5-10,

followed by the two digit obstacle index values for every grid square along the X axis. Continue index values on successive lines as required until the proper number have been entered for a given Y coordinate. DO NOT reenter the Y coordinate (column 5-10) for continuation lines relating to the same Y coordinate.

Continue the entries for as many Y coordinates as were reflected on Form II.1 (TERRAIN; Mobility Data) for field name SIZE (Key #1, columns 12-14).

If there are more entries than will fit on one form, continue as follows:

- Line out the keyword HALT at the bottom of the full sheet.
- 2. Using another sheet, line out the keyword OBSTACLE in the first line of the body of the form.
- 3. Continue entries in the body of the form in the same manner as the preceding page. If obstacle index values for a Y coordinate must be continued on another page, DO NOT reenter the Y coordinate (column 5-10) on the continuation sheet.
- 4. Do not line out the keyword HALT at the bottom of the last form used.

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II. TERRAIN

· 2. OBSTACLE DATA

DEWCOM MODEL

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II. TERRAIN

2. OBSTACLE DATA

DEWCOM MODEL

INPUT DATA PREPARATION FORM

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3.6.5 Form II.3 (TERRAIN: Base Height Data)

This form continues the description of the terrain selected for the simulation. It specifies the base height or altitude of each grid square, and is used as a point of reference in conjunction with hill location and hill characteristics data which will be entered using subsequent forms. Foldout samples of this form are located on page 53 and 55.

Key:

1

Name:

BASE

Spaces:

Grid Coordinate - 6

Base Height - 4 each

Columns:

Grid Coordinate - 5-10

Base Height - 12-15, 17-20, 22-25,...57-60

Entries:

Grid Coordinate - 6 digits

Base Height - A four digit integer value

Description:

Each entry identifies a minimum elevation above sea level in meters for the grid square as a whole. Base height data are grouped by Y coordinate in a manner similar to Mobility and Obstacle data in preceding subsections.

Beginning at the origin, enter the Y coordinate of the grid square in columns 5-10, followed by the base height in meters of every grid square along the X axis. Continue on successive lines until a height has been entered for every grid square in the X direction for a given Y coordinate. DO NOT reenter the Y coordinate (column 5-10) for continuation lines relating to the same Y coordinate.

Continue the entries for as many Y coordinates as were reflected on Form II.1 (TERRAIN; Mobility Data) for field name SIZE (Key #1, column 12-14).

If there are more entries than will fit on a form, continue on successive sheets in a manner similar to that described in the preceding subsections. (Line out the keyword HALT in all but the last sheet line and keyword BASE on the first line of all sheets after the first, etc.)

PREPARED BY	
PHONE:	DATE

DEWCOM MODEL

INPUT DATA PREPARATION FO

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II. TERRAIN

3. BASE HEIGHT DATA

DEWCOM MODEL

PUT DATA PPEPARATION FORM

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II. TERRAIN

3 BASE HEIGHT DATA

DEWCOM MODEL

INPUT DATA PREPARATION FORM

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3.6.6 Form II.4 (TERRAIN; Hills Data)

This form continues the description of the terrain selected for the simulation. It describes and locates hills, and, in conjunction with other data, is used to determine line of sight between various points on the terrain. Definitions of the fields identified by Keys 4 through 11 correspond to those in the STAR (Simulation of Tactical Alternative Responses) terrain model developed at the Naval Postgraduate School. Foldout samples of this form are located on pages 61 and 63.

Key:

1

Name:

HILLS

Spaces:

4

Columns:

9-12

Entries:

Integer

Description:

Identifies the total number of hills on the entire map.

Each hill is located and described through the entries on the remainder of the form (Keys 2-11). The number of subsequent entries (for Keys 2-11) must exactly correspond to

the entry in this field.

Key:

2

Name:

HILL INDEX

Spaces:

3

Columns:

4-6

Entries:

Integer

Description:

A sequential number, beginning with 1 for the first entry identifying the relationship of this hill to the first hill

listed.

If there are more entries than will fit on a form, continue on successive sheets in a manner similar to that described previously (Line out the keyword HALT on all but the last sheet used; line out keyword HILLS and the value entered on

the first line of all sheets after the first; etc.)

3

Name:

HILL ID

Spaces:

9

Columns:

8-16

Entries:

Alphanumeric

Description:

A unique identifier for a hill.

Key:

4

Name:

XC.H

Spaces:

6

Columns:

18-23

Entries:

6 digit grid coordinate

Description:

The X coordinate of the center location of the hill identi-

fied by the HILL INDEX and HILL ID on this line (Keys 2 and

3).

Key:

5

Name:

XC.Y

Spaces:

6

Columns:

26-31

Entries:

6 digit grid coordinate

Description:

The Y coordinate of the center location of the hill identi-

fied by the HILL INDEX and HILL ID on this line (Keys 2 and

3)

6

Name:

PEAK.H

Spaces:

6

Columns:

34-39

Entries:

Integer

Description:

The elevation of the hilltop in meters, measured from

zero = sea level.

Key:

7

Name:

ANG.H

Spaces:

6

Columns:

42-47

Entries:

Integer in the range of 0 to 360

Description:

The orientation angle of an ellipse representing a hori-

zonal cross-section of the hill, measured in degrees coun-

ter-clockwise from EAST to the major axis.

Key:

8

Name:

ECC.H

Spaces:

4

Columns:

52-55

Entries:

A ratio, greater than or equal to 1

Description:

The eccentricity of an ellipse representing the hill,

defined as the ratio of major axis length to minor axis

length.

Key:

9

Name:

SPRD.H

Spaces:

7

Columns:

58-64

Entries:

Integer

Description:

A measure of the hill size defined as the distance in meters $% \left(\mathbf{r}\right) =\left(\mathbf{r}\right)$

measured along the major axis from hill center to a contour

line which is 50 meters below the peak.

9

Name:

SPRD.H

Spaces:

7

Columns:

58-64

Entries:

Integer

Description:

A measure of the hill size defined as the distance in meters measured along the major axis from hill center to a contour

aneasured arong the major axis from him to center to a con-

line which is 50 meters below the peak.

Key:

10

Name:

HT.H

Spaces:

6

Columns:

67-72

Entries:

Integer, greater than or equal to 50

Description:

The maximum height of a "normal" curve describing this

hill mass, expressed in meters.

Key:

11

Name:

CUT.H

Spaces:

6

Columns:

75-80

Entries:

Integer

Description:

A vertical distance measured down from the peak of the

hill, beyond which this hill mass is no longer considered

in the computations of the model.

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II. TERRAIN

4. HILLS DATA

DEWCOM MODEL

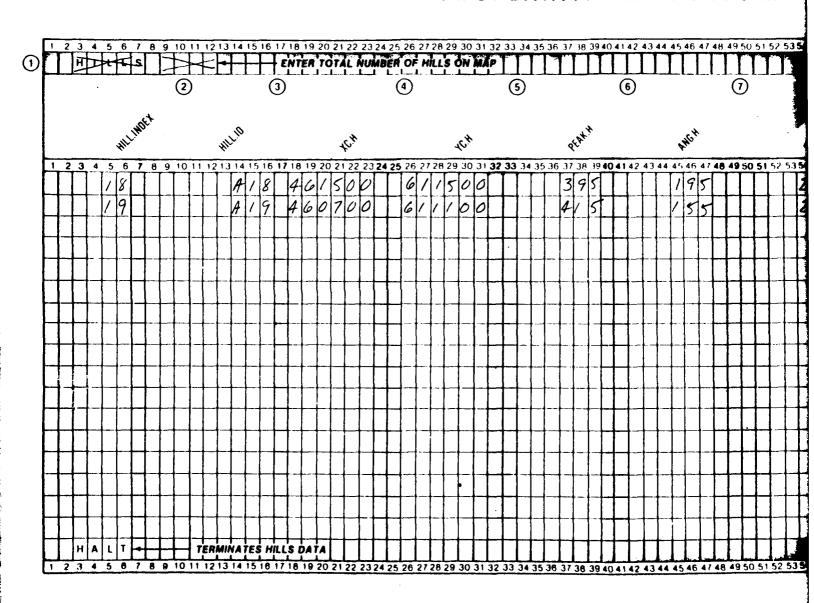
NPUT DATA PREPARATION FORM

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PREPARED	BA		
PHONE		DATE:	

DEWCOM MODEL

INPUT DATA PREPARATION FORM

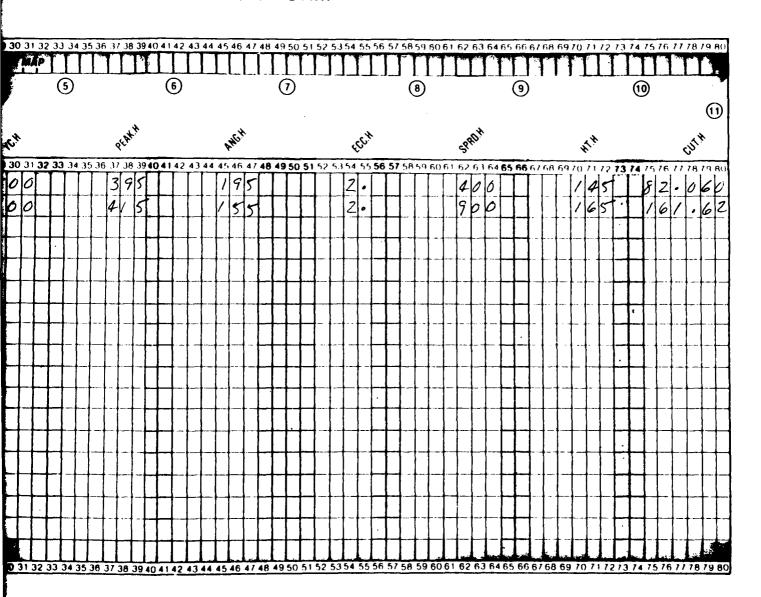


II. TERRAIN

4. HILLS DATA

DEWCOM MODEL

NPUT DATA PREPARATION FORM



3.6.7 Form II.5 (TERRAIN; Hill List Data)

This form continues the description of the terrain selected for the simulation. It identifies hills (Ly grid square) which have an effect on the simulation. Each entry consists of two lines, the first containing data described in Keys 1-4 and the second described in Key 5. A foldout sample of this form is located on page 67.

Key:

1

Name:

SQUARES IN X DIRECTION

Spaces:

3

Columns:

3-5

Entries:

Integer

Description:

An index value which locates a particular grid square in

terms of its distance from the origin, expressed in the

number of grid squares in the X direction.

Key:

2

Name:

SQUARES IN Y DIRECTION

Spaces:

3

Columns:

9-11

Entries:

Integer

Description:

An index value which locates a particular grid square in

terms of its distance from the origin expressed in the

number of grid squares in the Y direction.

3

Name:

HILLS

Spaces:

3

Columns:

15-17

Entries:

Integer

Description:

The number of hills having an effect on the grid square

defined by Keys 1 and 2 of this record.

Key:

4

Name:

BASELINE ELEVATION

Spaces:

4

Columns:

20-23

Entries:

Integer

Description:

The base height of the grid square defined by Keys 1 and 2.

This corresponds to the base height or altitude (expressed in meters) entered on Form II.3 (Base Height Data) for this

same grid square.

Key:

5

Name:

HILL IDs

Spaces:

4 each

Columns:

2-5, 7-10, 12-15,...77-80

Entries:

Integer

Description:

The second line of each entry lists the HILL INDEX number identifying each of the hills having an effect on the grid square defined by Keys 1 and 2. The number of entries must correspond exactly to the number of hills identified in Key 3 of this record (# HILLS). The HILL INDEX numbers are those on Form II.4 (Hill Data) (Key #2) having an effect on

this grid square.

If the number of hills exceeds the number that can be entered on one line (more than 16 for a particular square), continue on subsequent HILL IDs lines (Key #5), lining out the intervening line normally used in conjunction with Keys 1-4.

If there are more entries than will fit on a form, continue on successive sheets in a manner similar to that described in preceding subsections (line out the keyword HALT on all but the last sheet used; line out keyword HILL.LIST on the first line of all sheets after the first, etc.)

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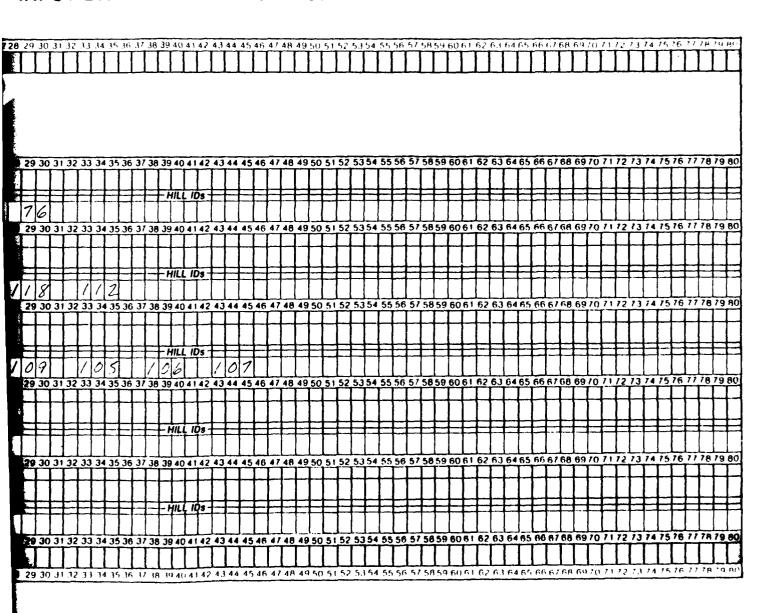
PREPARED BY _____

II. TERRAIN

5 HILL LIST DATA

DEWCOM MODEL

INPUT DATA PREPARATION FORM



3.6.8 Form II.6 (TERRAIN; Covers Data)

This form continues the description of the terrain selected for the simulation. It identifies shape, location, and height of covers on the map. Definitions of the fields identified by Keys 2 through 7 correspond to those in the STAR terrain model. A foldout sample of this form is contained on page 71.

Key:

1

Name:

COVERS

Spaces:

3

Columns:

10-12

Entries:

Integer

Description:

The number of separately identified cover areas on the map.

Each is located and described by Keys 2 through 7 below. The number of subsequent entries (for Key 2-7) must exactly

correspond to the entry in this field.

Key:

2

Name:

XC.E

Spaces:

6

Columns:

5-10

Entries:

6 digit grid coordinate

Description:

The $\ensuremath{\mathsf{X}}$ coordinate of the center of an ellipse representing

the area of cover.

If there are more entries than will fit on a form, continue on successive sheets in a manner similar to that described previously (line out the TWO keywords HALT on all but the last sheet used; line out the keyword COVERS and the spaces for its value on the first line of all sheets after the first etc.).

3

Name:

YC.E

Spaces:

6

Columns:

13-18

Entries:

6 digit grid coordinate

Description:

The Y coordinate of the center of an ellipse representing

the area of cover.

Key:

4

Name:

HT.E

Spaces:

6

Columns:

21-26

Entries:

Integer

Description:

The height in meters of the trees or other cover in this

ellipse above the terrain elevation

Key:

5

Name:

ANG. E

Spaces:

6

Columns:

29-34

Entries:

Integer in the range of 0 to 360

Description:

The orientation angle in degrees measured counter-clockwise

from East to the major axis of the ellipse.

Key:

6

Name:

AMAJ. E

Spaces:

6

Columns:

37-42

Entries:

Integer

Description:

Length in meters of the semi-major axis of the ellipse.

7

Name:

AMIN.E

Spaces:

6

Columns:

45-50

Entries:

Integer

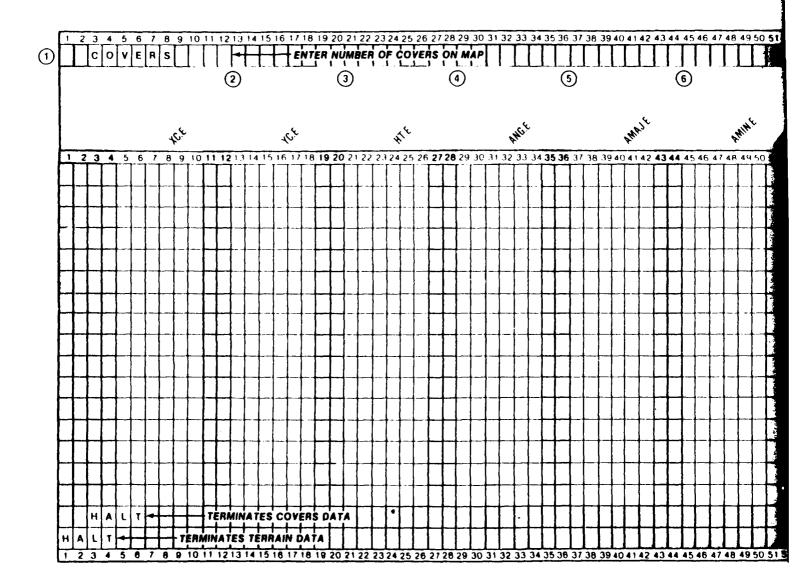
Description:

Length in meters of the semi-minor axis of the ellipse.

PREPARED BY	
PHONE	DATE

DEWCOM MODEL

INPUT DATA PREPARATION FOR

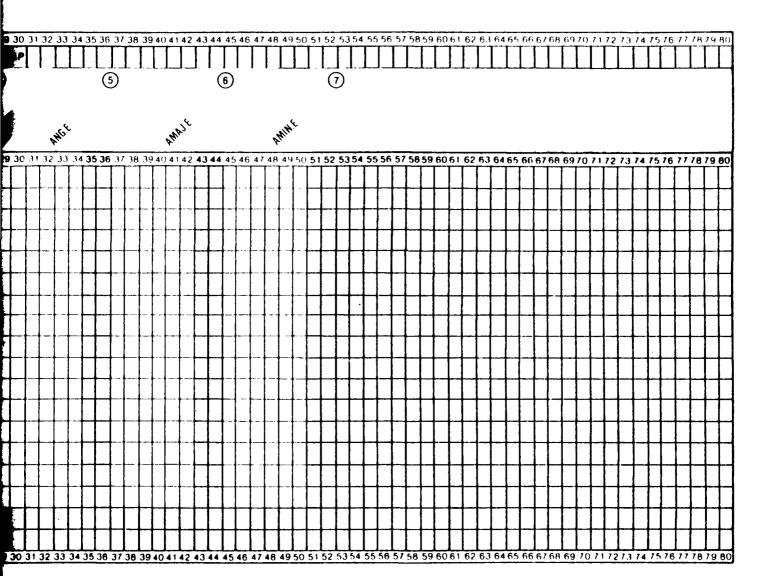


II. TERRAIN

6. COVERS DATA

DEWCOM MODEL

NPUT DATA PREPARATION FORM



3.6.9 Form III.1 (EQUIPMENT; Damage Class Data; Communications Equipment Data)

This form describes damage classes and communications equipment capabilities for the two sides (BLUE and RED). Foldout samples of this form are located on pages 77 and 79.

Key:

1

Name:

DAMAGE.CLASS

Spaces:

3

Columns:

16-18

Entries:

Integer

Description:

The total number of damage classes in the simulation.

The number of DC.VALUE entries on the lines immediately below must correspond exactly to the value in this field.

Key:

n/a

Name:

DC. VALUE

Spaces:

3 each

Columns:

5-7, 9-11, 13-15,...61-63

Entries:

Integer in the range 0 to 99 inclusive

Description:

A damage class value for each of the damage classes in the simulation. The first value corresponds to damage class #1, the second to damage class #2, etc. The number of entries must correspond exactly to the value entered for

Key 1 above.

2

Name:

COMM. EQUIP

Spaces:

3

Columns:

14-16

Entries:

Integer

Description:

The total number of types of communications equipment

in the simulation.

Separate sheets are used for each side (BLUE or RED) to enter the description and characteristics of their communications equipment. Entries for each side are delimited by the name of the side (BLUE or RED) and the corresponding HALT.

Entries for the first side begin on the first sheet of this type form (III.1). If there are more entries for the first side (BLUE or RED) than will fit on the first sheet, continue on successive sheets, lining out inapplicable keywords and spaces so that all entries for the first side are delimited by the side name (BLUE or RED) and the corresponding HALT.

Begin the second side (BLUE or RED) on a new sheet, lining out all keywords and related spaces in the top portion of the form EXCEPT for the entry identifying the side (BLUE or RED) (last line in top portion of form). If necessary, continue entries on successive sheets for the second side as previously instructed for the first.

Terminate all communications equipment data for the simulation with a HALT on the last sheet for the second side (corresponding to the keyword COMM. EQUIP on the first sheet for the first side).

3

Name:

CET. NAME

Spaces:

12

Columns:

7-18

Entries:

Alphanumer ic

Description:

The name for the type of communications equipment described

on this line.

Key:

4

Name:

CET.CLASS

Spaces:

5

Columns:

20-24

Entries:

RADIO or WIRE

Description:

A general classification for this type of communications

equipment

Key:

5

Name:

CET. DAMAGE.CLASS

Spaces:

2

Columns:

26-27

Entries:

Integer

Description:

The damage class number relating to this type of equipment from the list of DC.VALUE entries on Form III.1. If the first DC.VALUE listed Form III.1 relates to this type equipment, enter 1; if the second value relates, enter 2,

etc.

Key:

6

Name:

CET.MTBF

Spaces:

2

Columns:

29-30

Entries:

Integer

Description:

A value in hours expressing the mean time between failures

for this type equipment.

dest to be a second

7

Name:

CET.MTTR

Spaces:

2

Columns:

32-33

Entries:

Integer

Description:

A value in hours giving the mean time to repair this type

equipment.

Key:

8

Name:

CET.RANGE

Spaces:

6

Columns:

35-40

Entries:

Integer

Description:

A value in meters giving the range for this type equipment.

Key:

9

Name:

'CET. JAMMING. AWARENESS

Spaces:

3

Columns:

42-44

Entries:

YES or NO

Description:

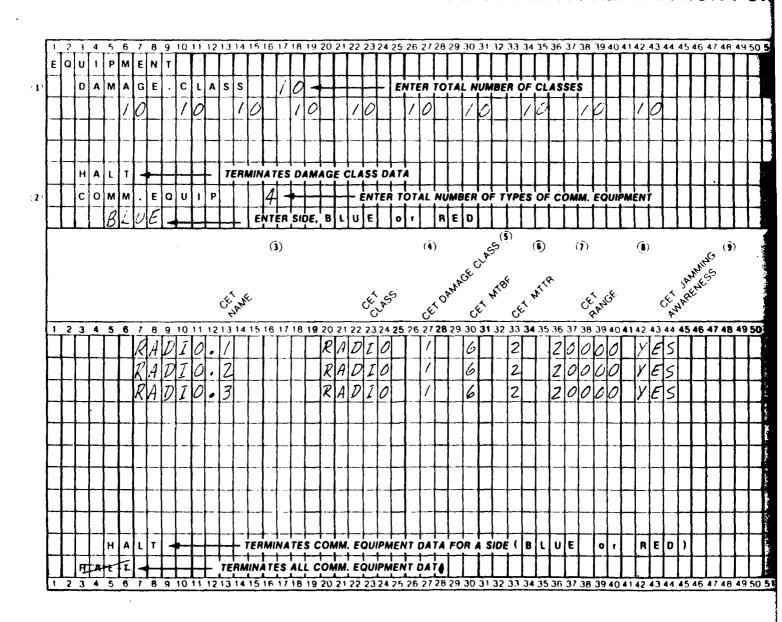
An entry indicating whether the user of this type equipment

can be aware of being jammed.

PREPARED BY	
PHONE	DATE

DEWCOM MODEL

INPUT DATA PREPARATION FOR

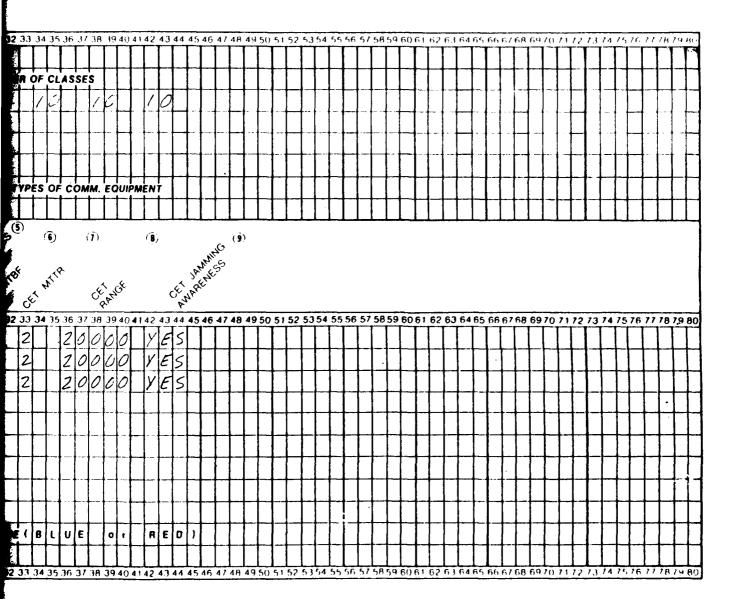


PAGE	 OF	
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EWCOM MODEL T DATA PREPARATION FORM

III EQUIPMENT

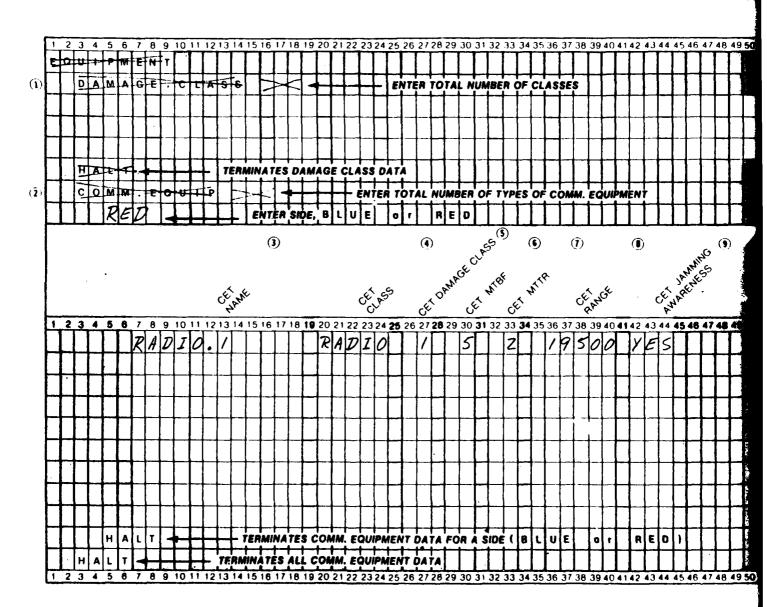
1 DAMAGE CLASS DATA COMMUNICATIONS EQUIPMENT DATA



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DUCALE	
PHONE	DATE.

DEWCOM MODE

INPUT DATA PREPARATION FO



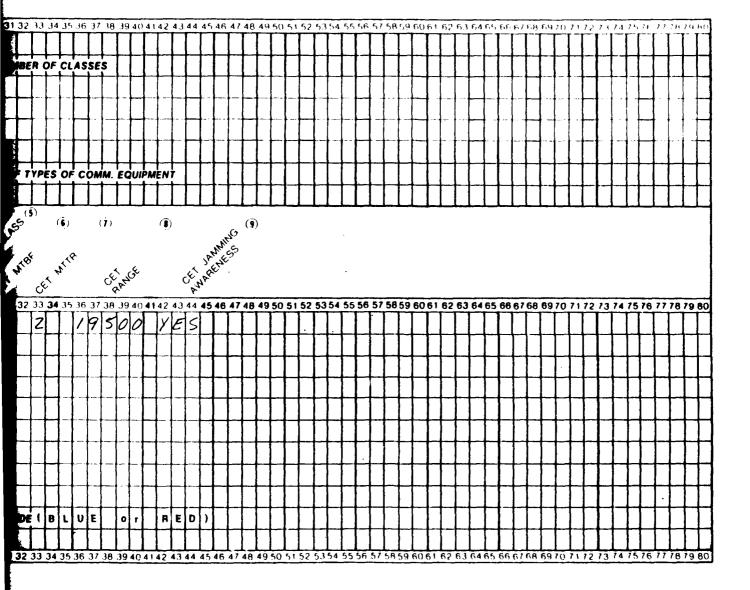
PAGE	()	r

DEWCOM MODEL

UT DATA PREPARATION FORM

III EQUIPMENT

1. DAMAGE CLASS DATA COMMUNICATIONS EQUIPMENT DATA



3.6.10 Form III.2 (EQUIPMENT; EW Equipment Data)

This form is used to describe electronic warfare equipment capabilities for the two sides (BLUE and RED). Foldout samples of this form are located on pages 85 and 87.

Separate sheets are used for each side (BLUE and RED) to enter the description and characteristics of their electronic warfare (EW) equipment. Entries for each side are delimited by the name of the side (BLUE or RED) and the corresponding HALT.

Entries for the first side begin on the first sheet of this type form (III.2). If there are more entries for the first side (BLUE or RED) than will fit on the first sheet, continue on successive sheets, lining out inapplicable key words and spaces so that all EW equipment for the side is delimited by the side name (BLUE or RED) and the corresponding HALT.

Begin the second side (BLUE or RED) on a new sheet, lining out the keyword EW. EQUIP and the space for its value near the top.

If necessary, continue entries on successive sheets for the second side as previously instructed for the first.

Delimit all EW equipment data for the simulation with the keyword EW. EQUIP and its corresponding HALT.

Key:

1

Name:

EW. EQUIP

Spaces:

3

Columns:

12-14

Entries:

Integer

Description:

The total number of types of communications equipment in

the simulation.

2

Name:

EWT. NAME

Spaces:

12

Columns:

7-18

Entries:

Alphanumeric

Description:

The name for the type of EW equipment described on this

line.

Key:

3

Name:

EWT.CLASS

Spaces:

11

Columns:

20-30

Entries:

One of the following:

Name	<u>Meaning</u>
LOC ATOR	Locator Equipment
INTERC EPTOR	Interceptor Equipment
LT.SPOT	Look Thru Spot Jammer
NL.SPOT	Non-look Thru Spot Jammer
LT.BARRAGE	Look Thru Barrage Jammer
NL.BARRAGE	Non-look Thru Barrage Jammer
CB.RADAR	Counterbattery Radar
RADAR	Radar
EX.SPOT	Expendable Spot Jammer
EX.BARRAGE	Expendable Barrage Jammer

Description:

The class of EW equipment being described, using

the above class names.

4

Name:

EWT.DAMAGE.CLASS

Spaces:

2

Columns:

32-33

Entries:

Integer

Description:

The damage class number relating to this type of equipment from the list of DC.VALUE entries on Form III.1. If the first DC.VALUE listed on Form III.1 corresponds to this type of equipment, enter 1; if the fifth value correponds,

enter 5, etc.

Key:

5

Name:

EWT.MTBF

Spaces:

2

Columns:

35~36

Entries:

Integer

Description:

A value in hours expressing the mean time between failures

for this type equipment.

Key:

6

Name:

EWT.MTTR

Spaces:

2

Columns:

38-39

Entries:

Integer

Description:

A value in hours expressing the mean time to repair

this type equipment.

Key:

7

Name:

EWT.RANGE

Spaces:

6

Columns:

41-46

Entries:

Integer

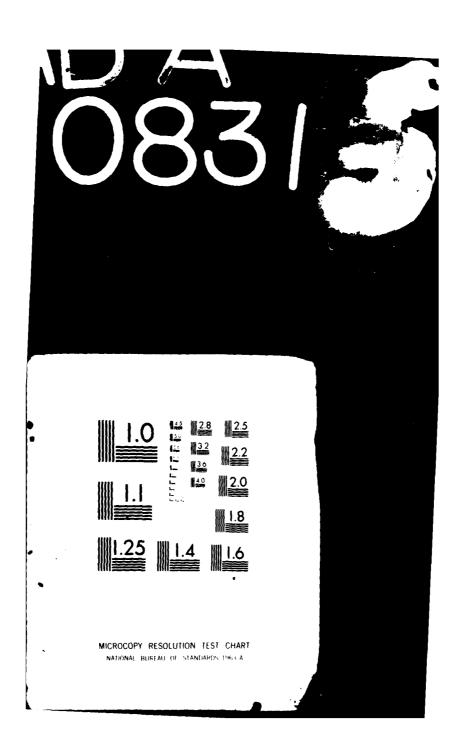
Description:

A value in meters giving the range for this type

equipment.

AD-A108 315 CACI INC-FEDERAL ARLINGTON VA F/6 17/4 DIVISIONAL ELECTRONIC MARFARE COMBAT (DEWCOM) MODEL - USER MANU-ETC(U)
SEP 80 R T CAMPBELL, R S FAIRBROTHER

CAA-D-80-5
NL UNCLASSIFIED NL



8

Name:

EWT.DF.TIME

Spaces:

3

Columns:

48-50

Entries:

Integer

Description:

The time period (in seconds) required to perform a direc-

tion finding function.

Key:

9

Name:

EWT. INTELLIGENCE. RATE

Spaces:

3

Columns:

52-54

Entries:

Integer in the range 0 to 100

Description:

The rate of gain (per second) of intelligence information

by an intercept function.

Key:

10

Name:

EWT.HIGH.FREQ

Spaces:

4

Columns:

56-59

Entries:

Integer

Description:

The high limit of the communications frequency range (in

megahertz) for which this equipment is effective.

Key:

11

Name:

EWT.LOW.FREQ

Spaces:

4

Columns:

61-64

Entries:

Integer

Description:

The low limit of the communications frequency range (in

megahertz) for which this equipment is effective.

12

Name:

EWT. RADAR. DURATION

Spaces:

3

Columns:

66-68

Entries:

Integer

Description:

For other than counter-battery radar, the time period

(in minutes) during which the unit normally transmits

pulses and receives the return.

Key:

13

Name:

EWT. RADAR. INTERVAL

Spaces:

3

Columns:

70-72

Entries:

Integer

Description:

For other than counter-battery radar, the time interval (in

minutes) between the intermittent transmission and return

periods of pulses.

Key:

14

Name:

EWT. PROB. OF. SAFE. ARRIVAL

Spaces:

3

Columns:

74 - 76

Entries:

none

Description:

The current version of the model does not use this vari-

able. It should be left blank.

Key:

15

Name:

EWT. PROB. OF. ARRIVING. ON. TARGET

Spaces:

3

Columns:

78-80

Entries:

none

Description:

The current version of the model does not use this vari-

able. It should be left blank.

A Sudden was a second

PREPARED	BY	
PHONE:		 DATE:

DEWCOM MODEL

INPUT DATA PREPARATION FORM

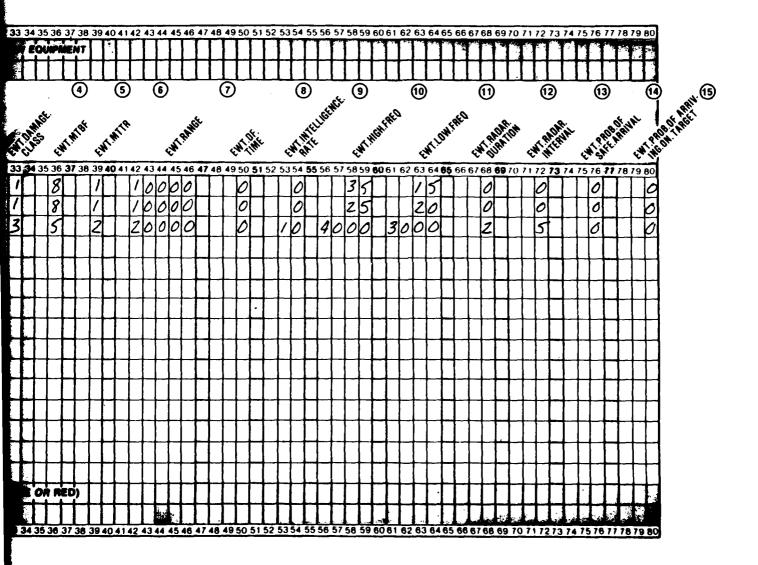
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III. EQUIPMENT

2. EW EQUIPMENT DATA

EWCOM MODEL

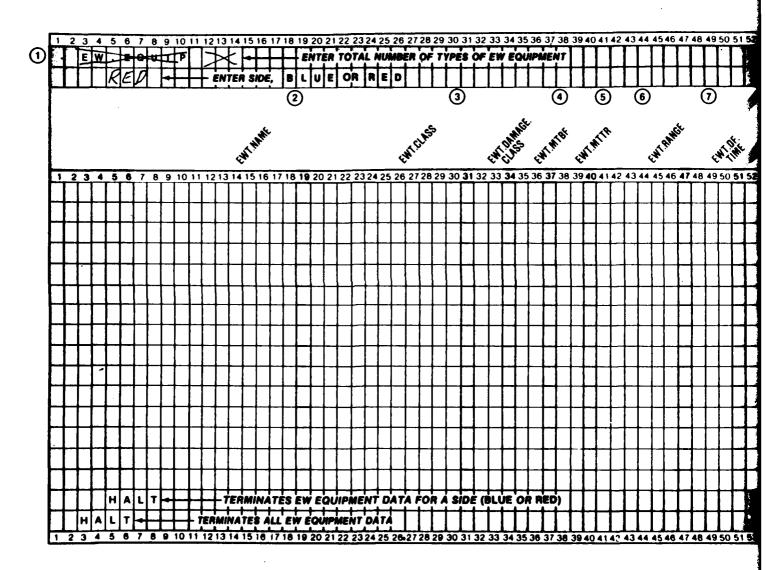
DATA PREPARATION FORM



PREPARED 8	Y:	
PHONE:		DATE

DEWCOM MODEL

INPUT DATA PREPARATION FORM

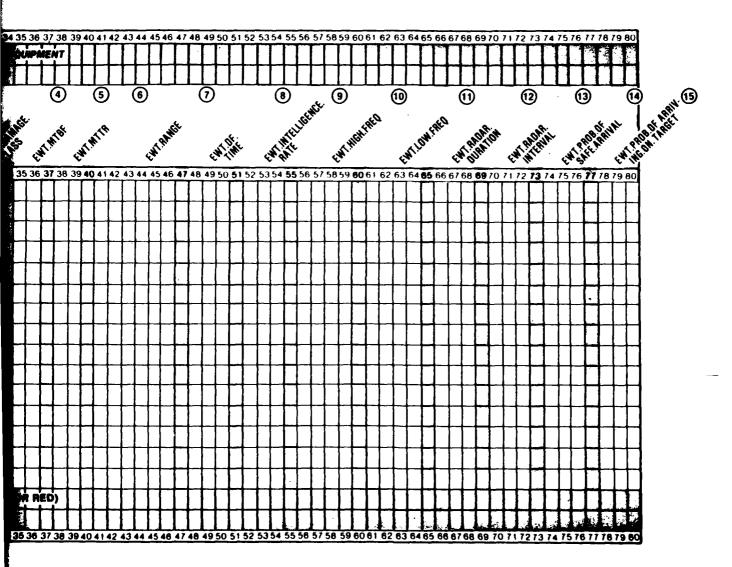


III. EQUIPMENT

2. EW EQUIPMENT DATA

WCOM MODEL

ATA PREPARATION FORM



3.6.11 Form III.3 (EQUIPMENT; Weapons Data)

This form is used to describe weapons capabilities for the two sides (BLUE and RED). Foldout samples of this form are located on pages 91 and 93.

Separate sheets are used for each side (BLUE and RED) to enter the description and characteristics of their weapons. for each side are delimited by the name of the side (BLUE or RED) and the corresponding HALT.

Entries for the first side begin on the first, sheet of this type form (III.3). If there are more entries for the first side (BLUE or RED) than will fit on the first sheet, continue on successive sheets, lining out inapplicable keywords and spaces so that all weapons data for the side are delimited by the side name (BLUE or RED) and the corresponding HALT.

Begin the second side (BLUE or RED) on a new sheet, lining out the keyword WEAPONS and the space for its value near the top. If necessary, continue entries on successive sheets for the second side as instructed previously for the first.

Delimit all weapons data for the simulation with the keyword WEAPONS and its corresponding HALT.

Key:

Name: WEAPONS

Spaces:

3

1

Columns:

11-13

Entries:

Integer

Description:

The total number of types of weapons in the simulation.

2

Name:

WT. NAME

Spaces:

12

Columns:

7-18

Entries:

Alphanumeric

Description:

The name for the type of weapon described on this line.

Key:

3

Name:

WT.COMBAT. VALUE

Spaces:

3

Columns:

20-22

Entries:

Integer in the range 0 to 100

Description:

The relative value of this weapon among all available wea-

pons.

Key:

4

Name:

WT.DAMAGE.CLASS

Spaces:

2

Columns:

24-25

Entries:

Integer

Description:

The damage class number relating to this type of equipment from the list of DC.VALUE entries on Form III.1. If the first DC.VALUE listed on Form III.1 corresponds to this type of equipment, enter 1; if the seventh value corres-

ponds, enter 7, etc.

Key:

5

Name:

WT.RANGE

Spaces:

5

Columns:

27-31

Entries:

Integer

Description:

A value in meters giving the range for this type weapon.

6

Name:

WT. ATTRITION.CLASS

Spaces:

Columns:

33-37

Entries:

LIGHT or HEAVY

Description: A rate at which attrition of this type weapon is incurred.

Key:

7

Name:

WT. TERRAIN. EFFECT

Spaces:

3

the same of the sa

Columns:

39-41

Entries:

YES or NO

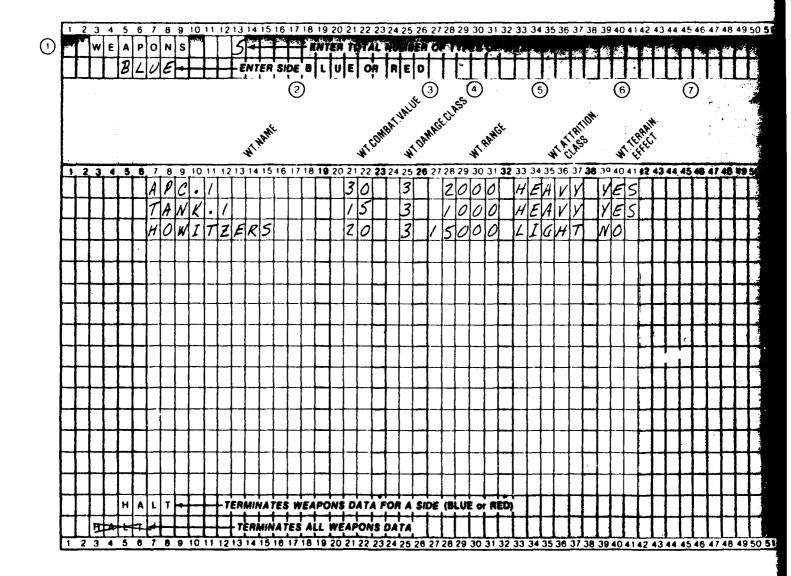
Description: An indication of whether or not terrain is a factor which

affects the attrition rate of this type weapon.

PREPARED BY	 	
PHONE	 DATE	

DEWCOM MODEL

INPUT DATA PREPARATION FOR

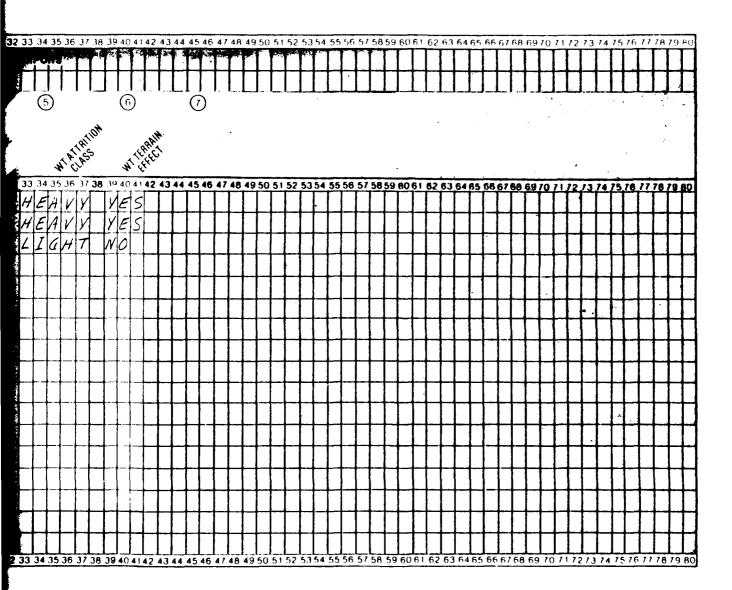


III. EQUIPMENT

3. WEAPONS DATA

EWCOM MODEL

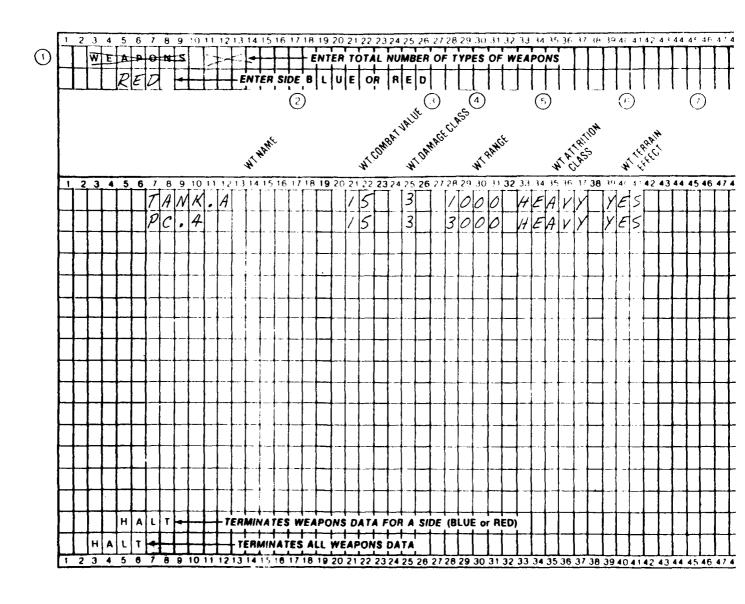
T DATA PREPARATION FORM



PREPARED BY	 		
PHONE	 DA	ATE.	

DEWCOM MOD

INPUT DATA PREPARATION

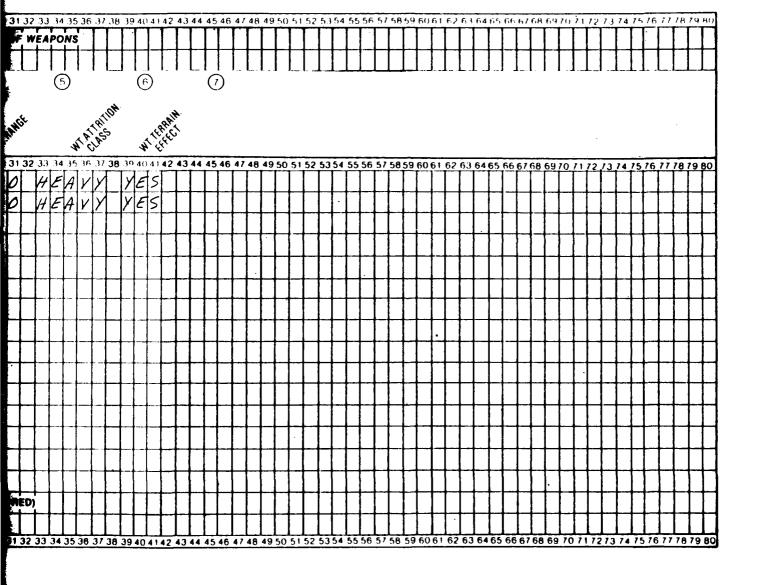


III. EQUIPMENT

3 WEAPONS DATA

DEWCOM MODEL

UT DATA PREPARATION FORM



3.6.12 Form III.4 (EQUIPMENT; Type Sortie Data)

This form is used to describe the types of air sorties employed in the simulation by each side (BLUE and RED). Foldout samples of this form are located on pages 99 and 101.

Separate sheets are used for each side (BLUE and RED) to indicate the types of air sorties each employs. Entries for each side are delimited by the name of the side (BLUE or RED) and the corresponding HALT.

Entries for the first side begin on the first sheet of this form (III.4). If there are more entries for the first side (BLUE or RED) than will fit on the first sheet, continue on successive sheets, lining out inapplicable keywords and spaces so that all air sortie types for the side are delimited by the side name (BLUE or RED) and the corresponding HALT.

Begin the second side (BLUE or RED) on a new sheet, lining out the keyword TYPE. SORTIE and the space for its value near the top. If necessary, continue entries on successive sheets for the second side as previously instructed for the first.

Delimit all air sortie data for the simulation with the keyword TYPE.SORTIE and its corresponding HALT.

Terminate all equipment data for the simulation with a HALT on the last sheet for the second side (corresponding to the keyword EQUIPMENT at the top of Form III.1) following the termination of type sortie data for the simulation.

1

Name:

TYPE. SORTIE

Spaces:

3

Columns:

15-17

Entries:

Integer

Description:

The total number of types of air sorties employed in the

simulation.

Key:

2

Name:

TAS. NAME

Spaces:

12

Columns:

7-18

Entries:

Alphanumeric

Description:

The name for the type of air sortie described on this line.

Key:

3

Name:

TAS.CLASS

Spaces:

6

Columns:

20-25

Entries:

ROTARY or FIXED

Description:

The class name for the type of air sortie described on this

line.

Key:

4

Name:

TAS.GROUND.COORDINATION

Spaces:

3

Columns:

27-29

Entries:

YES or NO

Description:

An indication of whether or not contact with a ground controller is required after arrival on target. If "YES" and contact does not occur within the loiter time specified

(see Key 6), the mission is aborted.

5

· Name:

TAS.TRANSIT.TIME

Spaces:

3

Columns:

31-33

Entries:

Integer

Description:

The time in minutes from dispatch until arrival in the

vicinity of the target.

Key:

6

Name:

TAS.LOITER.TIME

Spaces:

3

Columns:

35-37

Entries:

Integer

Description:

The time in minutes after arrival in the vicinity of the

target, after which the mission is aborted.

Key:

7

Name:

TAS. EFFECTIVENESS

Spaces:

3

Columns:

39-41

Entries:

Integer in the range 0 to 100

Description:

A value expressing the effectiveness of this type air

sortie.

Key:

8

Name:

TAS. TRANSIT. ATTRITION

Spaces:

3

Columns:

43-45

Entries:

Integer in the range 0-100

Description:

The percentage of sorties which incur attrition during

transit time to the target.

L. S. L. Aven Land Land

9

Name:

TAS.LOITER.ATTRITION

Spaces:

3

Columns:

47-49

Entries:

Integer in the range 0-100

Description:

The percentage of sorties which incur attrition during

loiter time in the vicinity of the target.

Key:

10

Name:

TAS.RENEWAL.TIME

Spaces:

4

Columns:

51-54

Entries:

Integer

Description:

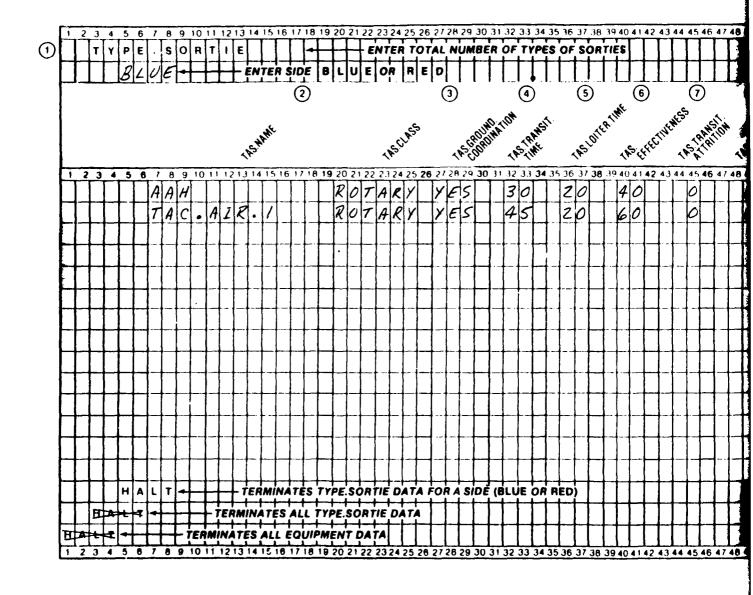
The time interval (in minutes) before an expended sortie is

again available for use.

PREPARED BY	
PHONE	DATE

DEWCOM MOD

INPUT DATA PREPARATION

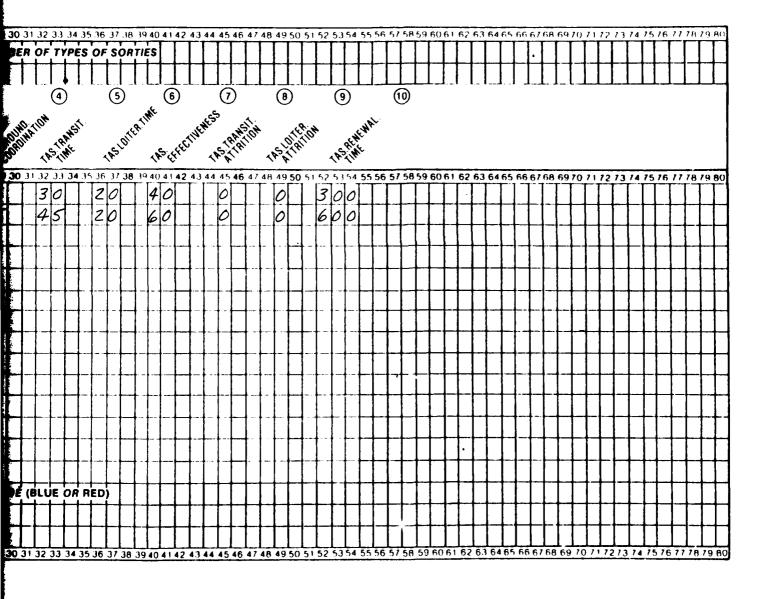


III. EQUIPMENT

4. TYPE SORTIE DATA

DEWCOM MODEL

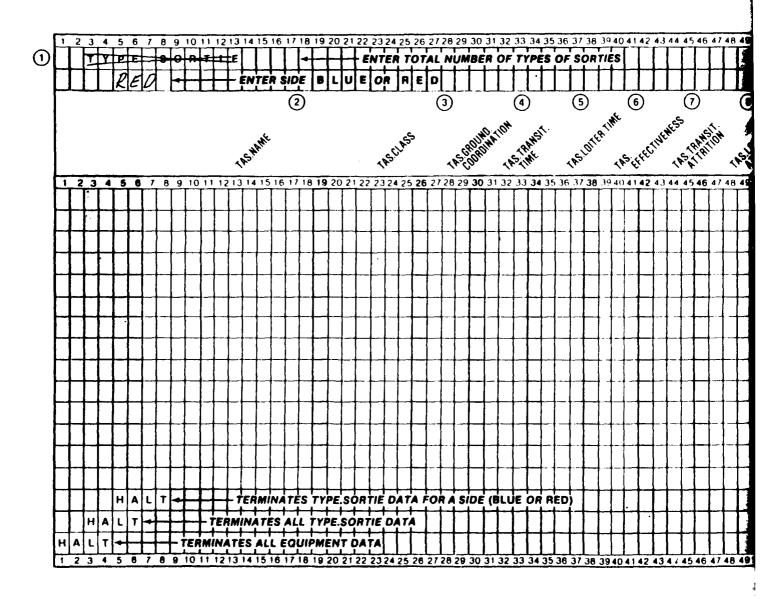
PUT DATA PREPARATION FORM



PREPARED BY		
PHONE	DATE	

DEWCOM MODE

INPUT DATA PREPARATION F

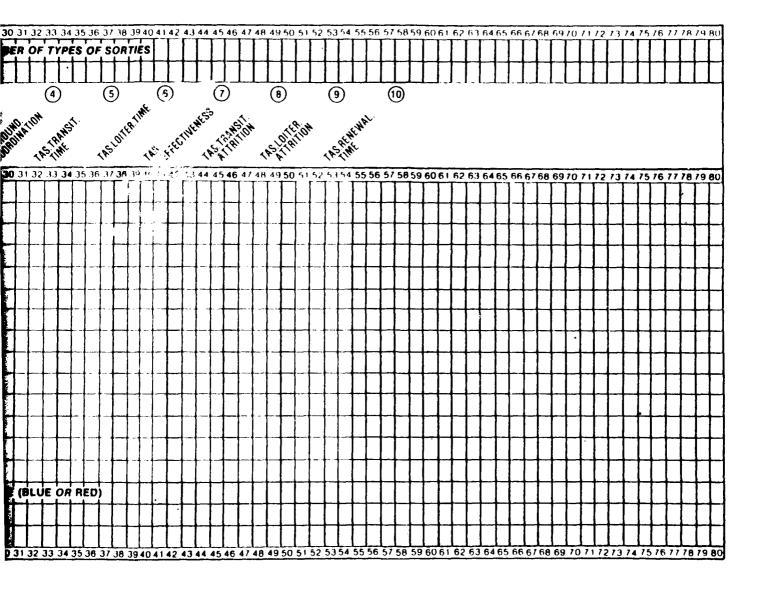


III. EQUIPMENT

4. TYPE SORTIE DATA

DEWCOM MODEL

PUT DATA PREPARATION FORM



3.6.13 Form IV.1 (TYPE UNITS; Unit Attribute Data, Communications Equipment Owned Data)

This form is used to describe the types of units assigned to each side and the names and quantities of communications equipment owned by each type unit. The form described in the next subparagraph (Form IV.2) is essentially a continuation of this form and it is used to describe the EW equipment and weapons owned by each type unit.

A minimum of one sheet of this form and one of Form IV.2 is required to describe the attributes and the types and quantities of equipment owned by <u>each type unit on each side</u>. For each type unit, Form IV.2 should follow immediately after this form.

On all forms of this type except the first, line out the keyword TYPE.UNITS and the space for its value near the top of the sheet.

On all forms of this type except the first for one side (BLUE or RED), line out the space for entering side designation (BLUE or RED) near the top of the sheet. Foldout samples of this form and IV.2 are located on pages 113 through 131.

Key:

1

Name:

Charles and Co.

TYPE.UNITS

Spaces:

3

Columns:

12-14

Entries:

Integer

Description:

The total number of types of units in the simulation.

2

Name:

TU. NAME

Spaces:

12

Columns:

5-16

Entries:

Alphanumeric

Description:

The name of the type of unit described on this form and

the next type form (Form IV.2)

Key:

3

Name:

TU.CLASS

Spaces:

9

Columns:

18-26

Entries:

One of the follow:

HQ

CORPS.HQ

DIV.HQ

BDE.HQ

REGT.HQ

BN.HQ

CO.HQ

ALT.CP

FDC

ARTILLERY

MANEUVER

SUPPORT

EW.UNIT

COMM.UNIT

OTHER

Description:

The type or class of unit described on this form and the

corresponding Form IV.2.

Key:

4

Name:

TU. ALTERNATE.CP

Spaces:

3

Columns:

28-30

Entries:

YES or NO

Description:

An indication of whether an alternate command post exists

for this type unit.

5

Name:

TU.MOVE.RATE

Spaces:

4

Columns:

32-35

Entries:

Integer

Description:

The rate, in meters per minute, at which this type

unit can move.

Key:

6

Name:

TU. RADIUS

Spaces:

3

Columns:

37-39

Entries:

Integer

Description:

The distance in meters from the location of the center of

the unit to its periphery (used to determine when opposing

units come into contact with each other).

Key:

7

Name:

TU. INTELLIGENCE. FADE. RATE

Spaces:

3

Columns:

41-43

Entries:

Integer ·

Description:

The percentage rate per minute at which intelligence infor-

mation relating to this type unit decreases in value.

Key:

8

Name:

TU.MAX.ENCRYPTION.CAPABILTY

Spaces:

3

Columns:

45-47

Entries:

Integer

Description:

The maximum number of messages which can be encrypted

simultaneously by this type unit.

9

Name:

TU. ENCRYPTION. FAC TOR

Spaces:

3

Columns:

49-51

Entries:

Integer

Description:

A multiplier used with message length to determine the time

in minutes required to encrypt a message.

Key:

10

Name:

TU. SUPPRESSION. FACTOR

Spaces:

3

Columns:

53-55

Entries:

Integer

Description:

The percentage decrease in a unit's effectiveness resulting

from it being subjected to opposing artillery fire.

Key:

11

Name:

TU. DURATION. OF. SUPPRESSION

Spaces:

3

Columns:

57-59

Entries:

Integer

Description:

The time in minutes, during which a unit's effect-

iveness is decreased because of opposing artillery fire.

Key:

12

Name:

TU. ARTY. DURATION

Spaces:

3

Columns:

61-63

Entries:

Description:

Integer
The duration of fire in minutes, of an opposing artillery

unit against this type unit.

13

Name:

TU. ARTY. INTERVAL

Spaces:

4

Columns:

28-31

Entries:

Integer

Description:

The time in minutes, between periods of fire by an

opposing artillery unit against this type unit.

Key:

14

Name:

TU.COMM. SETUP. TIME

Spaces:

3

Columns:

33-35

Entries:

Integer

Description:

The time in minutes, required for this type unit to establish wire communications after change from a moving posture (Attack, Move, Withdraw) to a static posture (Defend, De-

lay).

Key:

15

Name:

TU.COMM. TEARDOWN. TIME

Spaces:

3

Columns:

37-39

Entries:

Integer

Description:

The time in minutes, required for this type unit to dis-

continue wire communications before changing from a static posture (Defend, Delay) to a moving posture (Attack, Move.

Withdraw).

16

Name:

TU.EW.SETUP.TIME

Spaces:

3

Columns:

41-43

Entries:

Integer

Description:

The time in minutes, before this type unit can initiate

EW functions after changing from a moving posture to a

static posture.

Key:

17

Name:

TU. EW. TEARDOWN. TIME

Spaces:

3

Columns:

45-47

Entries:

Integer

Description:

The time in minutes, required for this type unit to dis-

continued EW functions in preparation for change from a

static posture to a moving posture.

Key:

18

Name:

TU. TACTICAL. SETUP. TIME

Spaces:

3

Columns:

49-51

Entries:

Integer

Description:

The time in minutes, required before an artillery unit

can be prepared to function after change from a moving

posture to a static posture.

19

Name:

TU. TACTICAL. TEARDOWN. TIME

Spaces:

3

Columns:

53-55

Entries:

Integer

Description:

The time in minutes, required before an artillery unit

can prepare for a change from a static posture to a moving

posture.

Key:

20

Name:

TU.EW.PRIORITY

Spaces:

3

Columns:

57-59

Entries:

Integer

Description:

The relative priority of this type unit for EW actions by an

opposing unit.

Key:

21

Name:

TU. IF. PRIORITY

Spaces:

3

Columns:

61-63

Entries:

Integer

Description:

The relative priority of this type unit for indirect fire

by an opposing unit.

22

Name:

COMM. EQUIP

Spaces:

CEP.ID -12

CEP. QUANTITY - 3

Columns:

CEP. ID - 9-20

CEP.QUANTITY - 22-24

Entries:

CEP.ID - Alphanumeric

CEP.QUANTITY - Integer

Description:

For the type unit identified in Key 2, list the equipment name for each type of communications equipment owned (CEP. ID) and the quantity owned (CEP.QUANTITY). If there is no communications equipment for this type unit, the keyword COMM. EQUIP and its corresponding HALT must still appear in the data stream.

If there are more entries for this type unit than will fit on one sheet, continue on successive sheets as follows:

- Line out the keyword HALT near the bottom of all but the last sheet used for this type unit.
- 2. Line out all keywords and spaces through the keyword COMM.EQUIP on all sheets except the first.

Follow the last page of this type form for each type unit with the next form (IV.2) describing EW equipment and weapons owned by this type unit.

3.6.14 Form IV.2 (TYPE UNITS; EW Equipment Owned Data; Weapons Owned Data)

This form is used to describe the names and quantities of EW equipment and weapons owned by each type unit on each side. This form is a continuation of the previously described form (IV.1) in that this one is used to list EW equipment and weapons for the type unit described on Form IV.1, on which names and quantities of communications equipment owned were also listed. Foldout samples of this form and IV.1 are located on pages 113 through 131.

Key:

1

Name:

EW. EQUIP

Spaces:

EWP. ID - 12

EWP.QUANTITY -3

Columns:

EWP. ID - 9-20

EWP.QUANTITY - 22-24

Entries:

EWP.ID - Alphanumeric

EWP.QUANTITY - Integer

Description:

For the type unit identified in Key 2 of the corresponding Form IV.1, list the equipment name for each type of EW equipment owned (EWP.ID) and the quantity owned (EWP. QUANTITY)

If there is no EW equipment for a type unit, the keyword EW.EQUIP and its corresponding HALT must still appear in the data stream.

If there are more entries for EW equipment for a type unit than will fit on this sheet, continue on successive sheets, lining out inapplicable keywords and spaces so that all EW equipment for each type unit on each side is delimited by the keyword EW. EQUIP and its corresponding HALT. On the last sheet listing EW equipment for a type unit, begin listing WEAPONS data for that type unit in accordance with instructions in Key 2 which follows.

2

Name:

WEAPONS

Spaces:

WP.ID - 12

WP.QUANTITY - 3

Columns:

WP.ID - 9-20

WP.QUANTITY - 22-24

Entries:

WP.ID - Alphanumeric

WP.QUANTITY - Integer

Description:

For the type unit identified in K ildot y ildot 2 of the corresponding Form IV.1, list the name for each type weapon owned (WP.ID) and the quantity owned (WP.QUANTITY).

If there are no weapons for a type unit, the keyword WEAPONS and its corresponding HALT must still appear in the data stream.

If there are more entries for weapons for a type unit than will fit on one sheet, continue on successive sheets, lining out inapplicable keywords and spaces so that:

- All weapons for each type unit on each side are delimited by the keyword WEAPONS and its corresponding HALT.
- All equipment of all types (Communications, EW, and Weapons) for a type unit is delimited by its type unit name (TU.NAME) on Form IV.1, Key 2 and the correponding HALT on this sheet.

The last sheet used for listing weapons for the last unit being described for a side must contain the HALT corresponding to the side name (BLUE or RED) on Form IV.1.

Complete Forms IV.1 and IV.2 for each type unit on each side.

When all communications equipment, EW equipment, and weapons have been listed for one side (BLUE or RED), begin for the other side on Form IV.1, lining out the keyword TYPE. UNITS and the space for its value at the top, and proceeding as above.

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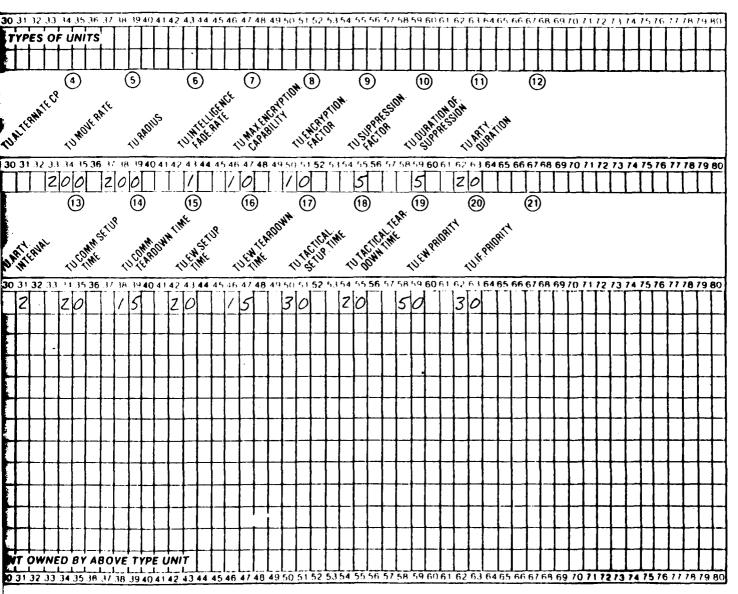
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DEWCOM MODEL

PUT DATA PREPARATION FORM

IV. TYPE UNITS

1. UNIT ATTRIBUTE DATA COMMUNICATIONS EQUIPMENT OWNED DATA

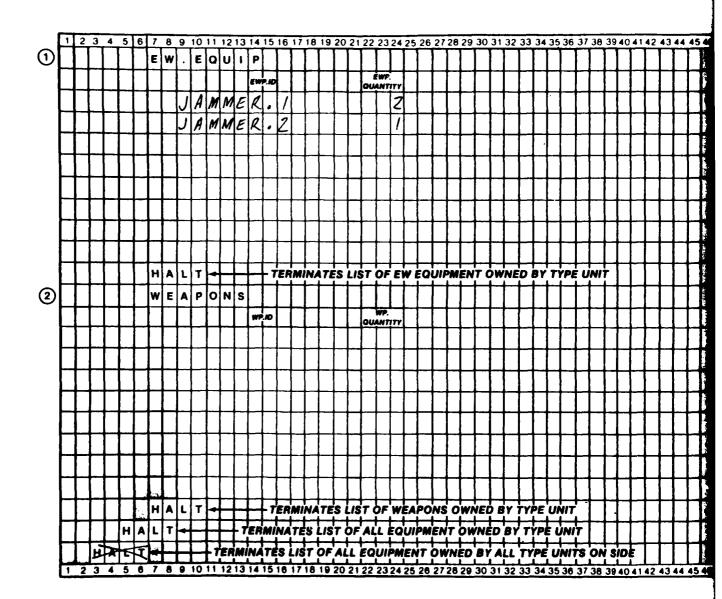


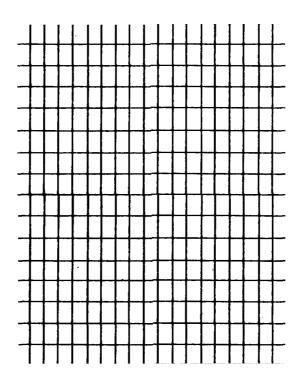
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INPUT DATA PREPARATION





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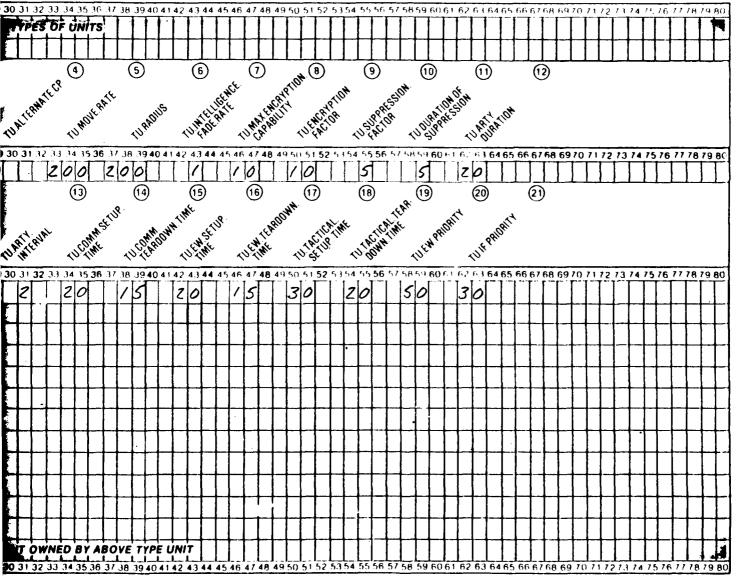
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IV. TYPE UNITS

1. UNIT ATTRIBUTE DATA
COMMUNICATIONS EQUIPMENT
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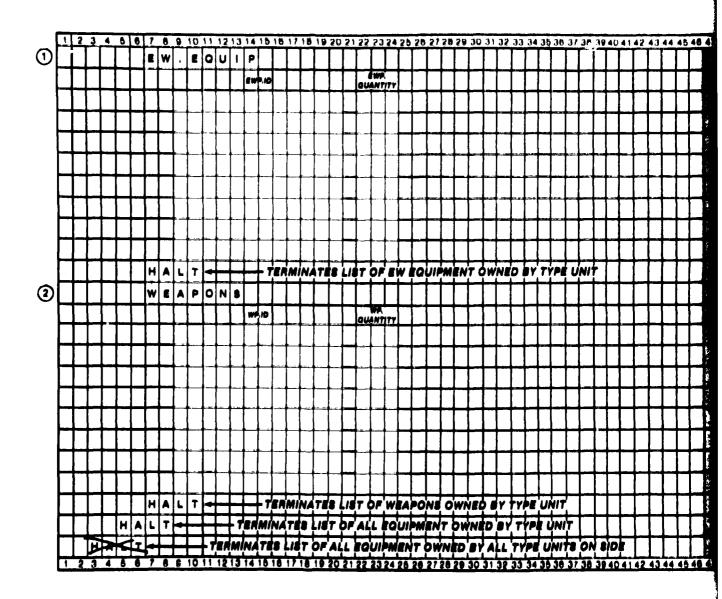




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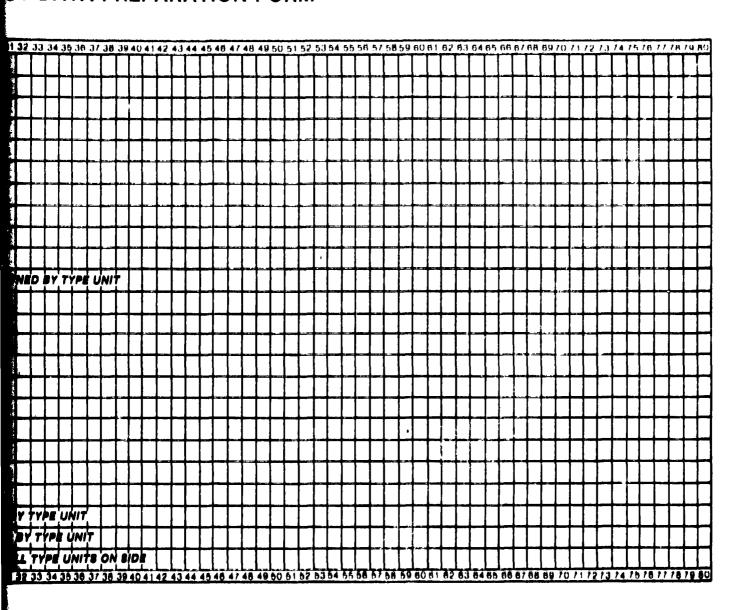


IV. TYPE UNITS

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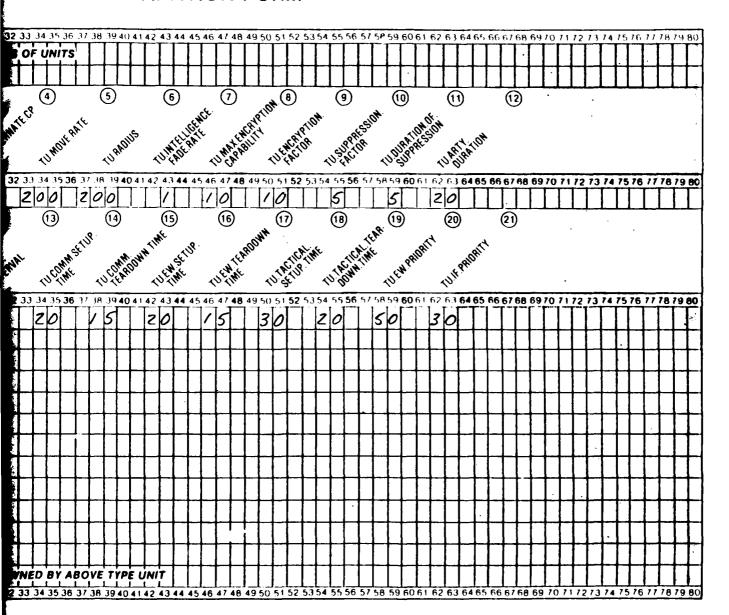
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IV. TYPE UNITS

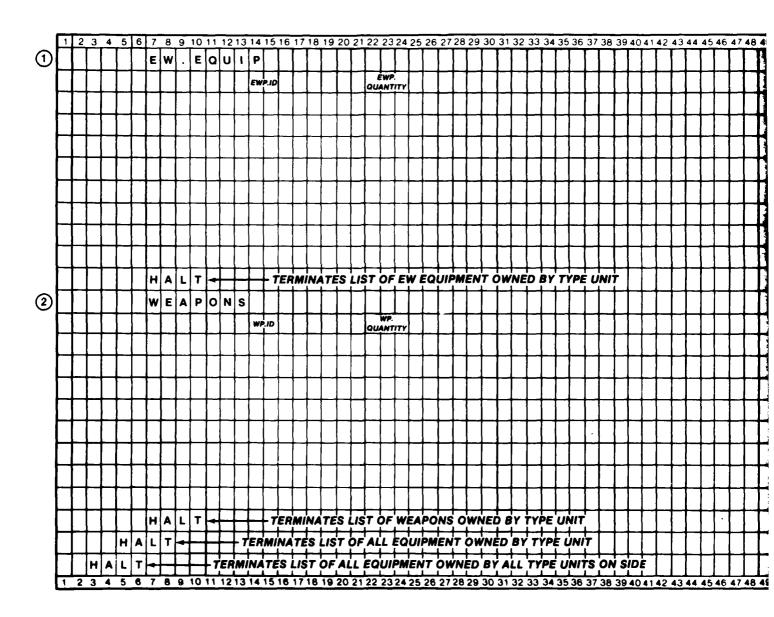
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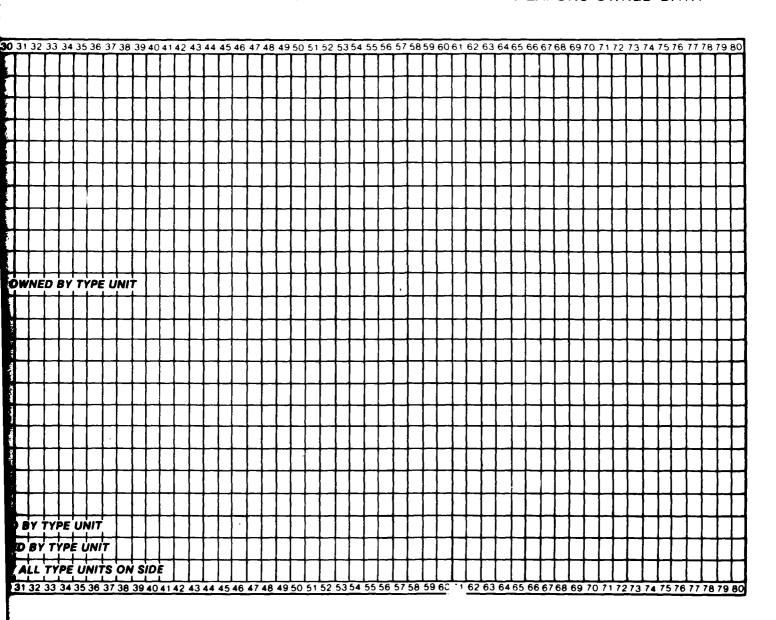
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IV. TYPE UNITS

2. EW EQUIPMENT OWNED DATA WEAPONS OWNED DATA

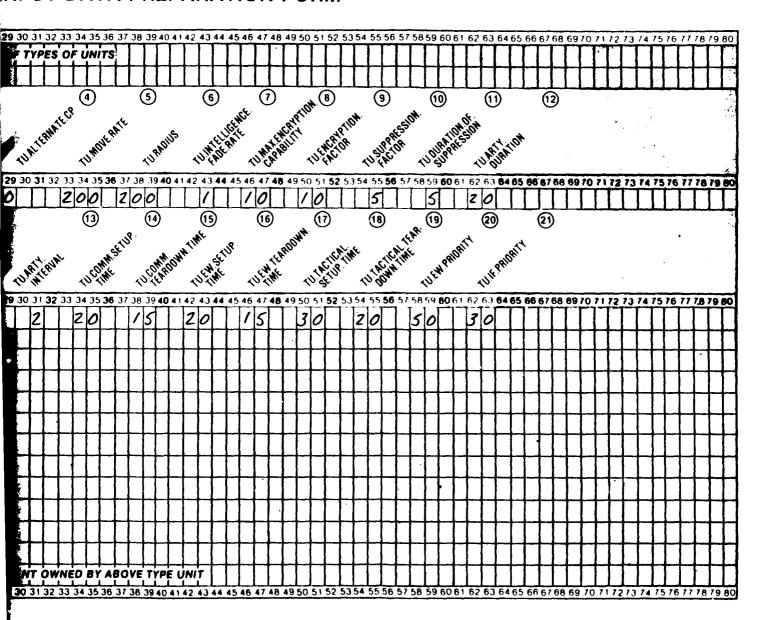


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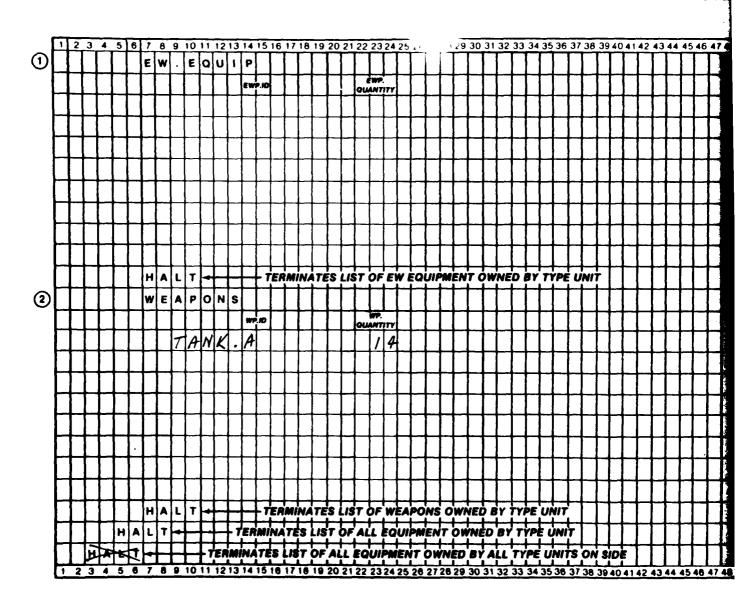
IV. TYPE UNITS

1. UNIT ATTRIBUTE DATA
COMMUNICATIONS EQUIPMENT
OWNED DATA



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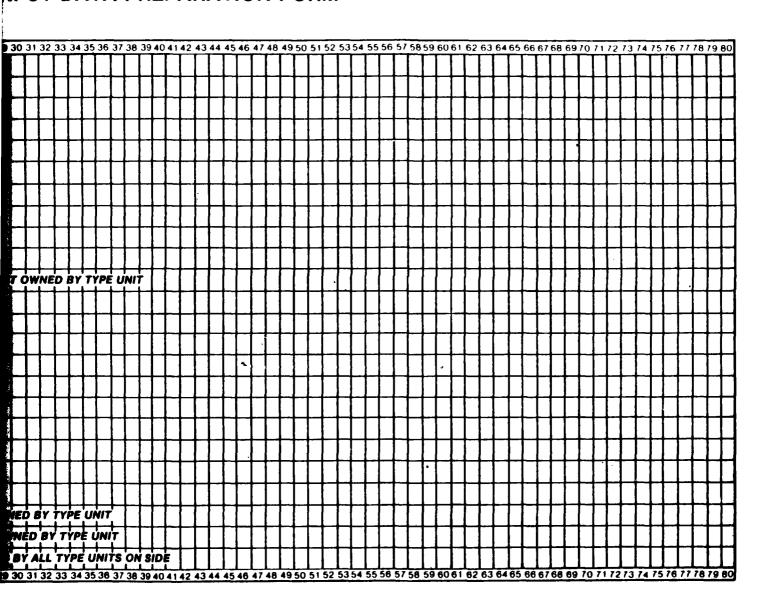


IV. TYPE UNITS

2. EW EQUIPMENT OWNED DATA WEAPONS OWNED DATA

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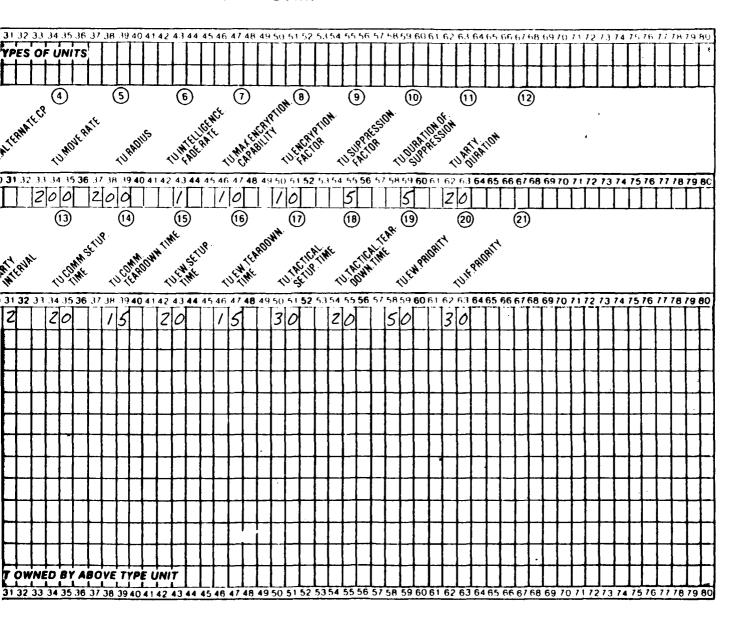
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IV. TYPE UNITS

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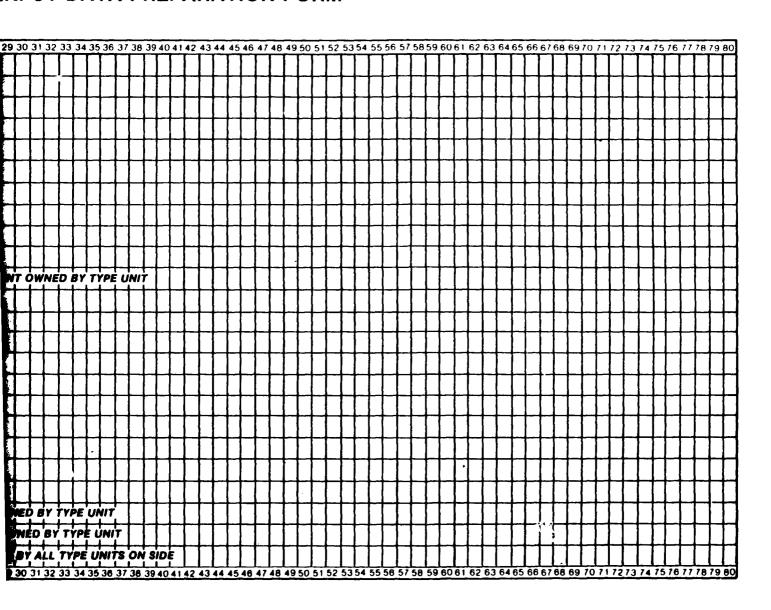
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IV. TYPE UNITS

2. EW EQUIPMENT OWNED DATA WEAPONS OWNED DATA

DEWCOM MODEL

INPUT DATA PREPARATION FORM



3.6.15 Form IV.3 (TYPE UNITS; Attrition Data; Desirability of Firing Data; Sector Width Data; Performance Degradation Factor Data)

This form is used to describe data relating to attrition, desirability of firing, sector width, and performance degradation. Complete one sheet for each type unit class on each side. Line out inapplicable keywords and spaces on all sheets of this type so that all type unit classes for each side are delimited by the side name (BLUE or RED) and the corresponding HALT; and all type unit class data for the simulation are delimited by the keyword TU.CLASS and its corresponding HALT.

The last sheet for the second side (BLUE or RED) must contain the delimiting HALT corresponding to the TYPE.UNITS keyword on Form IV.1.

Foldout samples of this form are located on pages 135 through 141.

Key: 1 Name: TYPE.UNIT.CLASS Spaces: TYPE.UNIT.CLASS - 9 LIGHT.NON.COMBAT.ATTRITION - 5 HEAVY.NON.COMBAT.ATTRITION - 5 Columns: TYPE.UNIT.CLASS - 7-15 LIGHT.NON.COMBAT.ATTRITION - 17-21 HEAVY.NON.COMBAT.ATTRITION - 23-27 TYPE.UNIT.CLASS - One of the following: Entries: HQ CORPS.HQ DIV.HQ BDE.HQ REGT.HQ BN.HQ CO.HQ ALT.CP FDC SUPPORT ARTILLERY MANEUVER EW.UNIT COMM.UNIT OTHER LIGHT. NON. COMBAT. ATTRITION and HEAVY. NON. COMBAT. ATTRITION-Integer or decimal Description: For each type unit class, a value representing percentage

of attrition per combat day.

Key:

2

Name:

ATTRIT.LIGHT

Spaces:

5 for each of 10 force ratio ranges

Columns:

22-26, 28-32,...76-80

Entries:

Integer

Description:

For the type unit class identified in Key 1, values representing percent attrition per combat day for force ratio ranges shown for light attrition conditions. The type unit class identified in Key 1 is represented by the second

value (1) in each ratio statement.

Key:

3

Name:

ATTRIT.HEAVY

Spaces:

5 for each of 10 force ratio range

Columns:

22-26, 28-32,...76-80

Entries:

Integer or decimal

Description:

For the type unit class identified in Key 1, values representing percent attrition per combat day for force ratio

ranges shown for heavy attrition conditions.

Key:

4

Name:

DESIRABILITY

Spaces:

5 for each of 20 possible entries

Columns:

22-26, 28-32,...76-80

Entries:

Integer in the range 0 to 1000

Description:

Values representing the relative desirability of firing a weapon of the opposing side at this type unit class. The first value corresponds to the first weapon of the opposing side in the order entered on Form III.3 (EQUIPMENT; Weapon Data). The second value corresponds to the second one listed, etc. The number of entries for this item must correspond to the number of weapons for the opposing side

entered on Form III.3.

Key:

5

Name:

WIDTH

Spaces:

3 for each of 5 entries

Columns:

15-17, 19-21, 23-25, 27-29, 31-33

Entries:

Integer

Description:

The sector width in meters, for this type unit class

for each of the five combat postures listed (ATTACK, DE-

FEND, MOVE, WITHDRAW, and DELAY), in that order.

Key:

6

Name:

PERFORMANC E

Spaces:

3 for each of 13 possible entries for each of 5 combat

postures.

Entries:

Integer

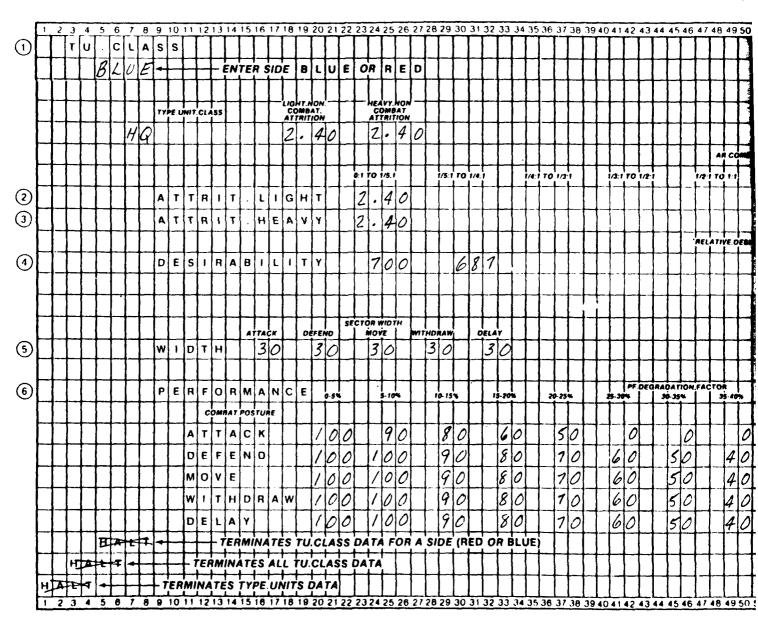
Description:

A performance degradation factor reflecting decreased performance of this type unit for each of 5 combat postures for the different levels of accumulated attrition shown in the column headings. The last value entered for a given combat

posture is used for all higher levels of attrition.

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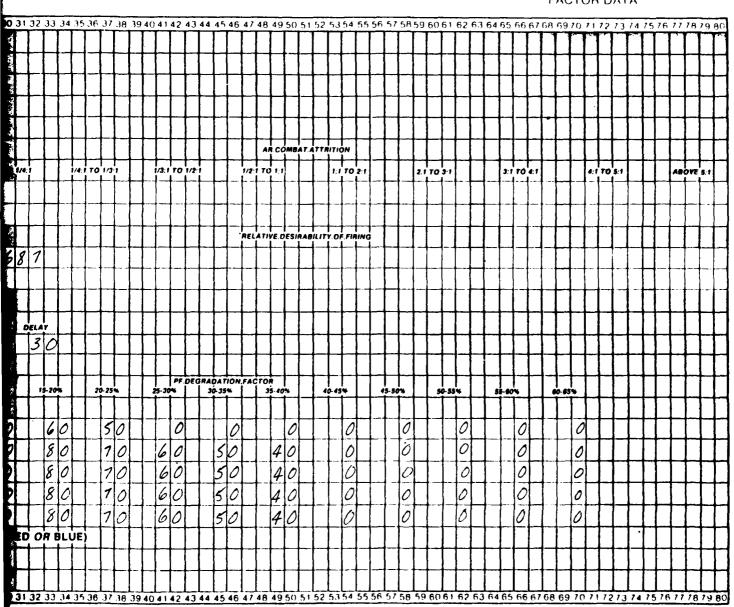
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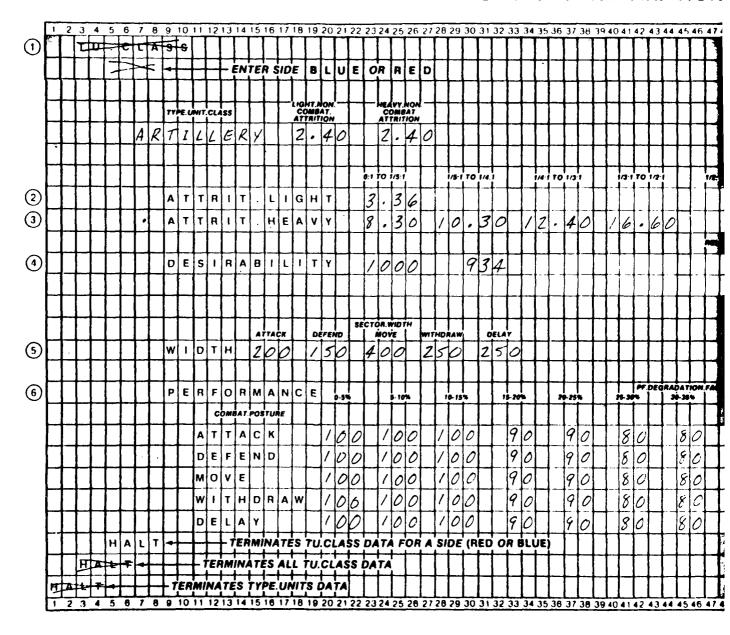
IV. TYPE UNITS

3 ATTRITION DATA
DESIRABILITY OF FIRING DATA
SECTOR WIDTH DATA
PERFORMANCE DEGRADATION
FACTOR DATA



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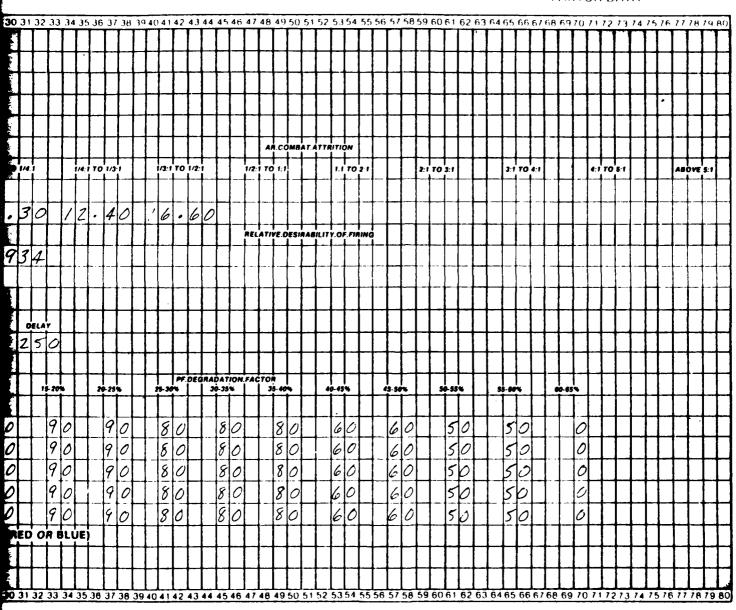
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IV. TYPE UNITS

3 ATTRITION DATA
DESIRABILITY OF FIRING DATA
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PERFORMANCE DEGRADATION
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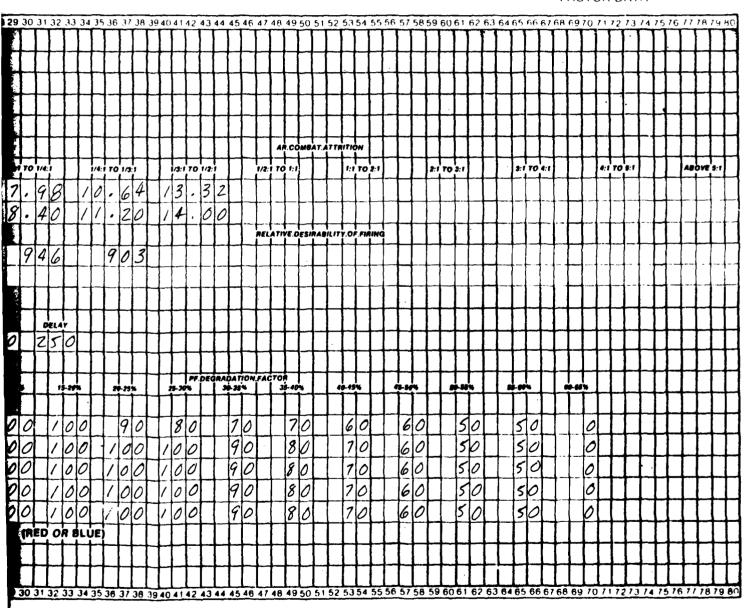
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INPUT DATA PREPARATION FORM

IV. TYPE UNITS

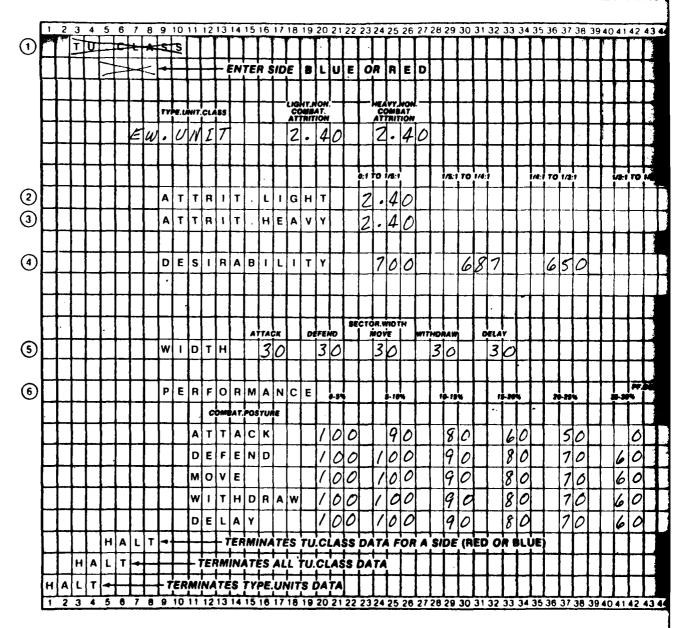
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SECTOR WIDTH DATA
PERFORMANCE DEGRADATION
FACTOR DATA



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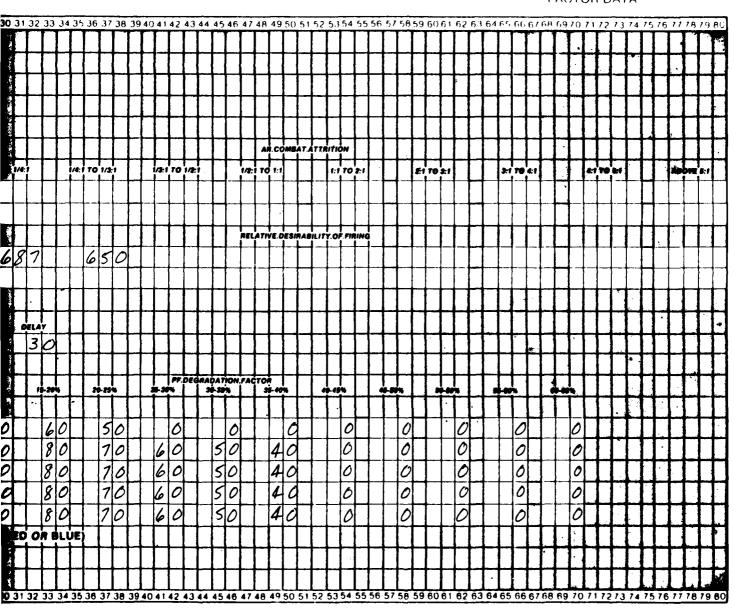
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PUT DATA PREPARATION FORM

IV. TYPE UNITS

3 ATTRITION DATA
DESIRABILITY OF FIRING DATA
SECTOR WIDTH DATA
PERFORMANCE DEGRADATION
FACTOR DATA



..... rorm v.1 (COMBAT ORGANIZATION; Units Data)

This form is used to uniquely identify each unit assigned to each side, along with its location and superior unit. The information should be entered in the order of the chain of command, i.e., Division Headquarters followed by all Brigade Headquarters, etc. using separate sheets for each side (BLUE and RED). Line out inapplicable keywords and spaces to that all units on each side are delimited by the side name (BLUE or RED) and its corresponding HALT; and all units data for the simulation are delimited by the keyword UNITS and its corresponding HALT. Foldout samples of this form are located on pages 145-149.

Key:

1

Name:

UN. ID

Spaces:

4

Columns:

7-10

Entries:

Integer

Description:

An identification number which is unique for each unit on a

side.

Key:

2

Name:

UN. NAME

Spaces:

12

Columns:

12-23

Entries:

Alphanumeric

Description:

The name of the unit represented.

Key:

3 .

Name:

TU.NAME

Spaces:

12

Columns:

25-36

Entries:

The value entered must be one of the names of the typed of

unit input on Form IV.1

Description:

The type unit represented.

Key:

4

Name:

UN. X.COORDINATE

Spaces:

6

Columns:

38-42

Entries:

Numeric

Description:

The six digit X UTM grid coordinate specifying the location

of the unit.

Key:

5

Name:

UN.Y.COORDINATE

Spaces:

6

Columns:

45-50

Entries:

Numeric

Description:

The six digit Y UTM grid coordinate specifying the location

of the unit.

Key:

6

Name:

UN.SUPERIOR.UNIT

Spaces:

4

Columns:

52-55

Entries:

Integer

Description:

The identification number (Key 1) of this unit's superior

unit in the chain of command. If the unit has no superior

unit, enter zero (\emptyset) .

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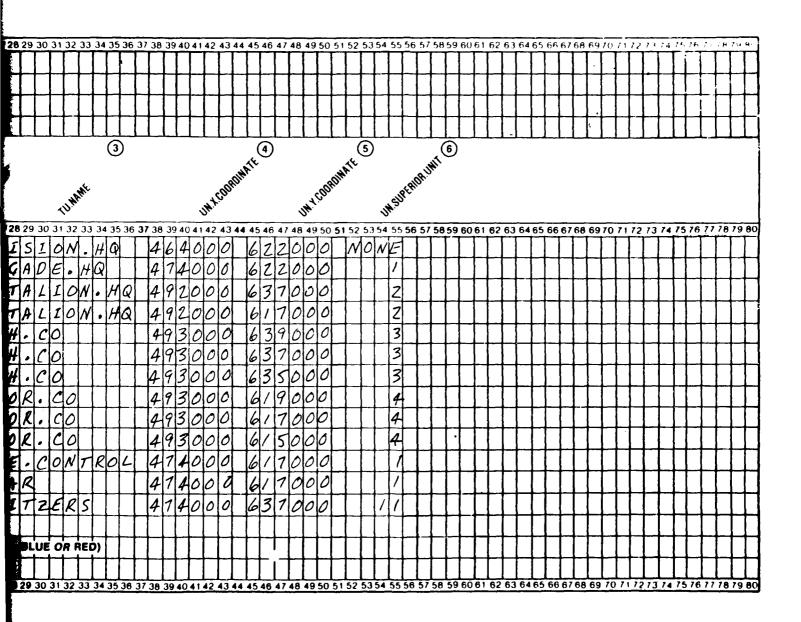
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V. COMBAT ORGANIZATION

. JNITS DATA



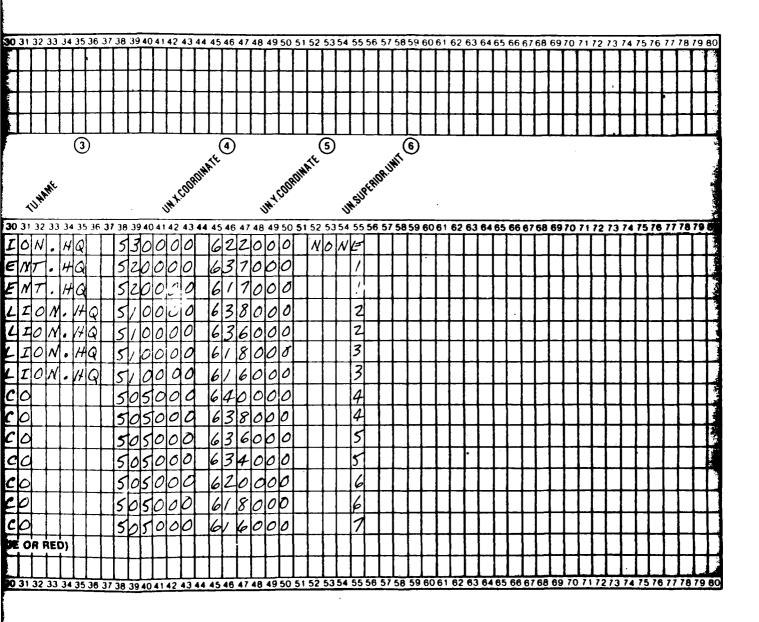
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V. COMBAT ORGANIZATION

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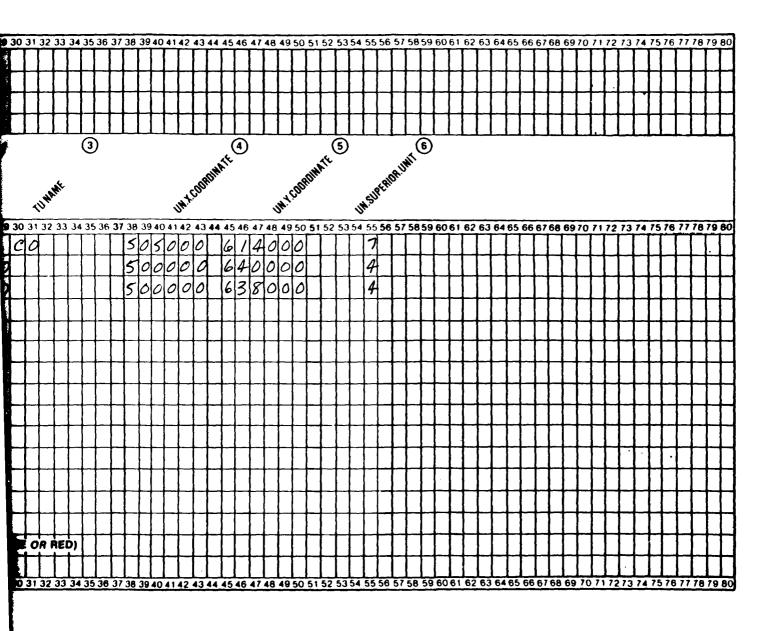
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PREPARED BY:

NPUT DATA PREPARATION FORM

V. COMBAT ORGANIZATION

1. UNITS DATA



3.6.17 Form V.2 (COMBAT ORGANIZATION; Air Sortie Data)

This form is used to continue to describe unit capabilities, and is used to identify the types and quantities of air sorties which can be deployed by each unit. Complete a separate sheet for <u>each</u> unit on <u>each</u> side.

Line out inapplicable keywords and spaces on all sheets so that

- (1) All air sortie data for a unit is delimited by the keyword UNIT (and unit ID) and its corresponding HALT;
- (2) All air sortie data on each side is delimited by the side name (BLUE or RED) and its corresponding HALT,
- (3) All air sortie data for the simulation is delimited by the keyword AIR.SORTIE and its corresponding HALT.

The last sheet for the second side (BLUE or RED) must contain the delimiting HALT corresponding to the keyword COMBAT.ORG on Form V.1.

Foldout samples of this form are located on pages 153 and 155.

Key:

Name: UNIT

1

Spaces: 4

Columns: 12-15

Entries: Integer

Description: The identification number of the unit deploying the air

sorties listed in Key 2.

Key:

2

Name:

AS. TYPE

AS.QUANTITY

`Spaces:

AS.TYPE - 12

AS.QUANTITY - 4

Columns:

AS. TYPE - 9-20

AS.QUANTITY - 22-25

Entries:

AS.TYPE - Alphanumeric

AS.QUANTITY - Integer

Description:

Under AS.TYPE, enter the name for this type of air sortie, corresponding to one of the types identified on Form III.4 for the side to which this unit belongs. Under AS.QUAN-TITY, specify the quantity of this type of air sortie which

the unit can deploy.

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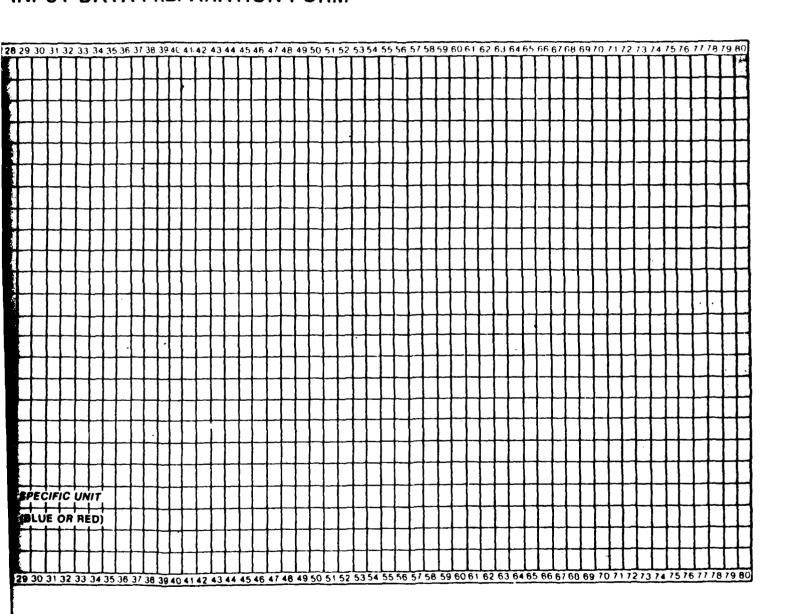
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V. COMBAT ORGANIZATION

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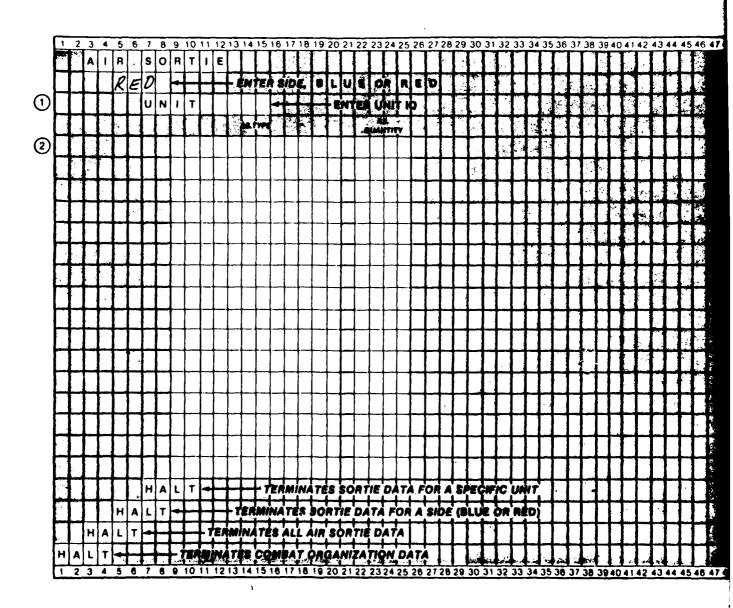
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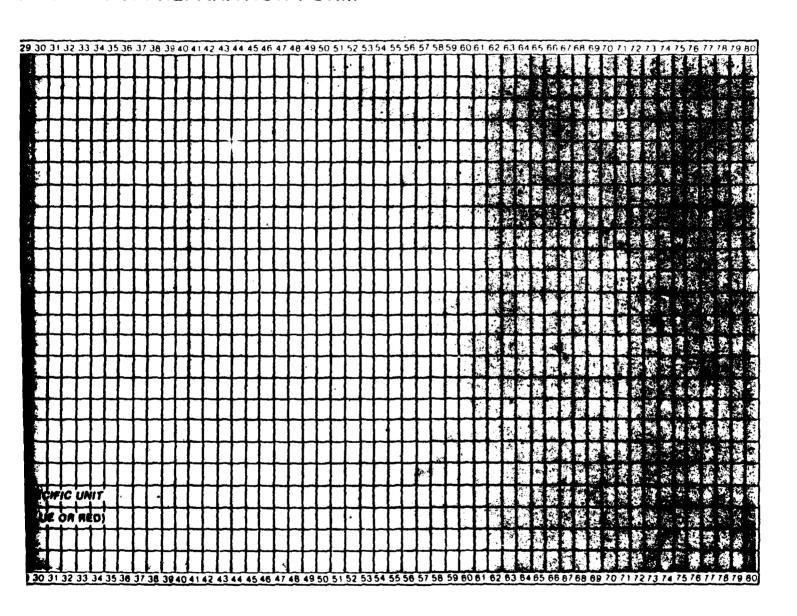


V. COMBAT ORGANIZATION

2. AIR SORTIE DATA

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NPUT DATA PREPARATION FORM





3.6.18 Form VI.1 (COMMUNICATIONS ORGANIZATION; Nets and Links)

This form is used to describe the communications nets and links owned by each side. Each net for each side is described on a separate sheet, along with its links.

Line out inapplicable keywords and spaces on all sheets so that:

(1) All link data relating to a specific net are delimited by the

keyword LINKS and its corresponding HALT;

- (2) All net and link data for a side are delimited by the side name (BLUE or RED) and its corresponding HALT;
- (3) All communications organization data in the input stream are delimited by the keyword COMM.ORG and its corresponding HALT.

A foldout sample of this form is located on page 163.

Key: 1

Name: NET.ID

Spaces:

6

Columns:

5-10

Entries:

Integer

Description:

An identifier for a communications net which is unique for

a side.

Key:

2

Name:

NET. TYPE

Spaces:

9

Columns:

12-20

Entries:

One of the following:

RADIO

WIRE

MESSENGER

Description:

The type of communications net being described.

Key:

3

Name:

NET.MODE

Spaces:

7

Columns:

22-28

Entries:

One the following:

VOICE

TT

CW

DATA

MESSAGE

Description:

A description of the mode or medium for this net.

Key:

4

Name:

NET.SECURITY

Spaces:

8

Columns:

30-37

Entries:

One of the following:

CLEAR

ON.LINE (on line encryption)

OFF.LINE (off line encryption)

Description:

The type of security available on the net.

Key:

5

Name:

NET.USAGE

Spaces:

12

Columns:

39-50 .

Entries:

One of the following:

COMMAND

SURVEILLANCE

INTELLIGENCE

AIR.REQUEST

OPERATIONS

CAS.COORD

ADMIN.LOGIS

CMMN

FIRE.DIRECT

Description:

An indication of the principal usage of the net.

6

Name:

NET.CONTINUOUS.CARRIER

Spaces:

3

Columns:

52-54

Entries:

YES or NO

Description:

An indication of whether the net utilizes a continuous (as

opposed to intermittent) signal carrier.

Key:

7

Name:

NET.PRIMARY.FREQ

Spaces:

3

Columns:

56-58

Entries:

Integer

Description:

A value in megahertz identifying the net's primary fre-

quency.

Key:

8

Name:

NET. SECONDARY. FREQ

Spaces:

3

Columns:

60-62

Entries:

Integer

Description:

A value in megahertz identifying the net's secondary fre-

quency. If the net does not have a secondary frequency,

repeat the primary frequency in this field.

Key:

9

Name:

LK. ID

Spaces:

6

Columns:

7-12

Entries:

Integer

Description:

An identifier, unique for each side, which specifies each

link in the net being described.

10

Name:

LK.A.END

Spaces:

4

Columns:

14-17

Entries:

Integer

Description:

The UNIT.ID for one of the ends of a link. The UNIT.ID

must correspond to one of those entered on Form V.1 for this

side.

Key:

11

Name:

LK.B.END

Spaces:

4

Columns:

19-22

Entries:

Integer

Description:

The UNIT.ID for the second end of a link. The UNIT.ID

must correspond to one of those entered on Form V.1 for this

side.

Key:

12

Name:

LK.A. EQUIP. POINTER

Spaces:

12

Columns:

24-35

Entries:

Alphanumeric

Description:

The communications equipment type name used by the LK.A.END

of the link. The name must correspond to one of those

entered under CET.NAME on Form III.1 for this side.

13

Name:

LK.B.EQUIP.POINTER

Spaces:

12.

Columns:

37-48

Entries:

Alphanumer ic

Description:

The communication equipment type name used by the LK.B.END

of the link. The name must correspond to one of those

entered under CET.NAME on Form III.1 for this side.

Key:

14

Name:

LK.DIRECTION

Spaces:

3

Columns:

50-52

Entries:

ONE or TWO

Description:

An indication of whether the link is a one way or two way

channel.

Key:

15

Name:

LK.DESIRABILITY.OF.USING

Spaces:

3

Columns:

54-56

Entries:

Integer in the range 0-100

Description:

A value reflecting the desirability of using this link over

an alternate link.

Key:

16

Name:

LK.TIME.TO.CONVERT

Spaces:

3

Columns:

58-60

Entries:

Integer

Description:

A value in minutes indicating the time required to convert

this link from radio to wire.

17

Name:

LK. CHANNELS

Spaces:

3

Columns:

62-64

Entries:

Integer

Description:

The maximum number of usable channels in this link.

Key:

18

Name:

LK.CONVERTABILITY

Spaces:

3

Columns:

66-68

Entries:

YES or NO

Description:

An indication of whether or not the link converts from

radio to wire after the unit has been in one location for a

period equivalent to LK.TIME.TO.CONVERT in Key 16.

Key:

19

Name:

LK.SWITCHABILITY.CODE

Spaces:

3

Columns:

70-72

Entries:

YES or NO

Description:

An indication of whether this link can be concatenated with

another link to transmit a message.

Key:

20

Name:

LK.JAMMABILITY.CODE

Spaces:

3

Columns:

74-76

Entries:

YES or NO

Description:

An indication of whether this link is affected by jamming.

				
PHONE:	DAT	E:		OM MO
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1 2 3 4 5 6 7 8 9 10	0 / 5	3 RADI 3 RADI	0.3 k	(A D I O . 3 A D I O . 3
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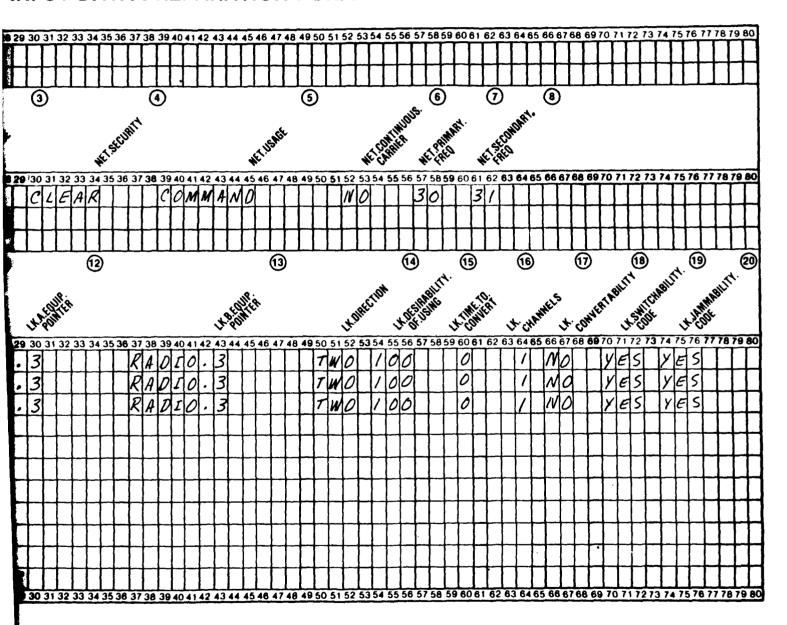
PAGE ___ OF ___

DEWCOM MODEL

INPUT DATA PREPARATION FORM

VI. COMMUNICATIONS ORGANIZATION

1. NETS AND LINKS





3.6.19 Form VI.2 (COMMUNICATIONS ORGANIZATION; Compound Links)

This form is used to describe any compound links which may exist in a communications net. It is used to further define the data entered on Form VI.1. It also contains the keyword HALT terminating COMM.ORG data for each side (corresponding to side name on Form VI.1) and the keyword HALT corresponding to the keyword COMM.ORG on page VI.1, termining all COMM.ORG data for the simulation.

If multiple copies of the form are needed, line out all inapplicable keywords and spaces so that all compound link data for all links in a net are delimited by the keyword COMPOUND and its corresponding HALT.

A sample of this form is located on the facing page.

Key:

n/a

Name:

LK.ID

CL.POINTER

Spaces:

LK.ID - 6

CL.POINTER - 4

Columns:

LK.ID - 9-14

CL.POINTER - 16-19, 21-24,...76-79

Entries:

LK.ID - Integer

CL.POINTER - Integer

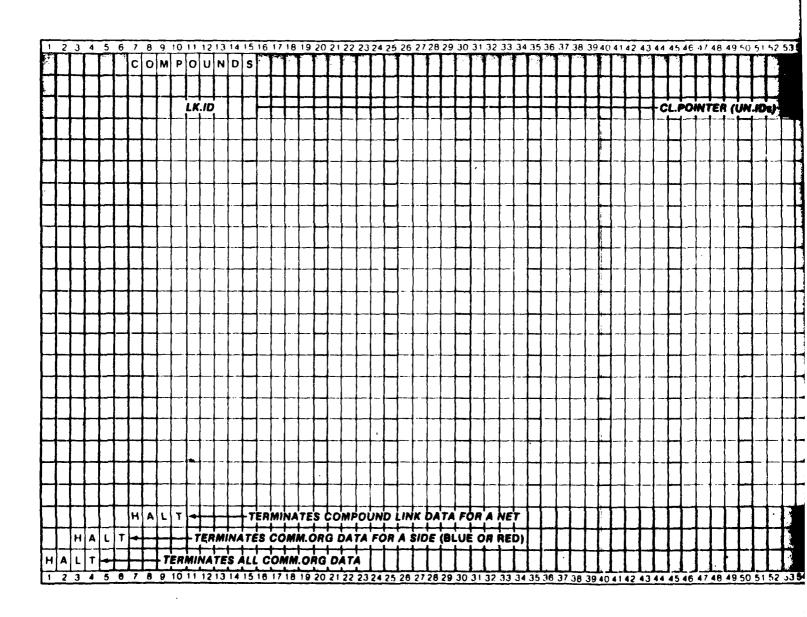
Description:

Identifies every unit in a compound link. The LK.ID uniquely identifies the link which is compound. Entries under CL.POINTER include the UN.ID of every unit in the compund link. Terminate the UN.ID list for <u>each</u> compound link with a dollar sign (\$). If all units in a compound link cannot be entered on one line, continue on the next line. Do not reenter the LK.ID on second and succeeding lines.

PREPAR	ED BY	
PHONE		DATE:

DEWCOM MODEL

INPUT DATA PREPARATION FORM

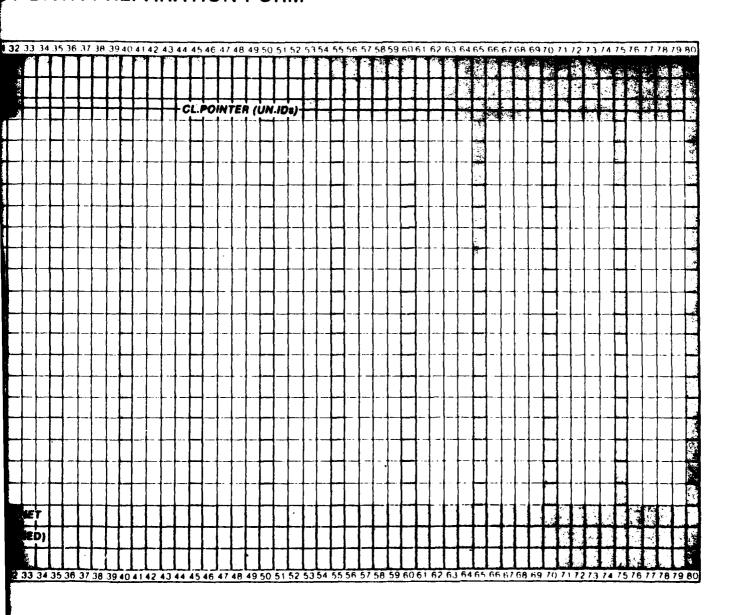


PEWCOM MODEL

UT DATA PREPARATION FORM

VI. COMMUNICATIONS ORGANIZATION

2 COMPOUND LINKS



2

3.6.20 Form VII.1 (ORDERS; Communications Orders)

This form is used to describe the attributes of communications orders for each side by type unit. Each sheet has space to enter data for two types of units. Use additional sheets as required, lining out inapplicable keywords and spaces on each sheet so that all communications orders for a side are delimited by the side name (BLUE or RED) and the corresponding HALT; and all communications orders for the simulation are delimited by the keyword COMM.ORDERS and the corresponding HALT.

Foldout samples of this form are located on pages 173 through 177.

Key:

1

Name:

TU.CLASS

Spaces:

9

Columns:

7-15

Entries:

Alphanumeric

Description:

A type unit class corresponding to one of those listed

under TU.CLASS on Form VI.1, Key 3, whose communications

orders are described in Keys 2-16 on this sheet.

Key:

2

Name:

CO.ID

Spaces:

3

Columns:

9-11

Entries:

Integer

Description:

A unique identifier for a communications order.

3

Name:

CO.DESTINATION

Spaces:

9

Columns:

13-21

Entries:

One of the following:

HQ

CORPS.HQ

DIV.HQ

BDE.HQ

REGT.HQ

BN.HQ

CO.HQ

ALT.CP

FDC

ARTILLERY

MANEUVER

SUPPORT

EW.UNIT

COMM.UNIT

OTHER

BROADC AST

Description:

The type unit class to which the communications order is

being sent.

Key:

4

Name:

CO.STIMULUS

Spaces:

12

23-34

Columns:

Entries:

One of the following:

CHANGE.MISSION

MSG.RECEIPT INFORMATION

STRENGTH

TIME

COORDINATION

ATTACK.FR

FAILURE.FR

Description:

The reason for sending a message.

Key:

5

Name:

CO.MODE

Spaces:

7

Columns:

36-42

VOICE

Entries:

One of the following:

C3.

CW

DATA

MESSAGE

Description:

The method of transmitting a message.

TT

6

Name:

CO.PRECEDENCE

Spaces:

9

Columns:

44-52

Entries:

One of the following:

DEFERRED

ROUTINE

PRIORITY

IMMEDIATE

FLASH

Description:

The relative order in which the message is to be handled

within the system among other messages.

Key:

7

Name:

CO. THRESHOLD

Spaces:

3

Columns:

54-56

Entries:

Integer in the range 0 to 100

Description:

A value representing a quantity of information or a

strength level, above which the message is transmitted.

Key:

8

Name:

CO.LENGTH

Spaces:

3

Columns:

58-60

Entries:

Integer

Description:

A value in seconds reflecting the transmission time of the

message.

Key:

9

Name:

CO. INTELLIGENCE. VALUE

Spaces:

3

Columns:

62-64

Entries:

Integer in the range 0 to 100

Description:

The relative intelligence value to the opposing side of the

contents of the message (for purposes of interception

only).

10

Name:

CO.ACTION

Spaces:

9

Columns:

13-21

Entries:

Description:

One of the following:

ATTAG: 0555ND 100N

ATTACK DEFEND MOVE WITHDRAW DELAY JAM NONE
The action to be taken as a result of the message. An addi-

tional possible entry is a CO.ID (See Key 2) of another

message to be transmitted.

Key:

11

Name:

CO.USAGE

Spaces:

12

Columns:

23-34

Entries:

One of the following:

COMMAND

INTELLIGENCE

OPERATIONS

ADMIN.LOGIS

FIRE.DIRECT

SURVEILLANCE

AIR.REQUEST

CAS.COORD

CMMN

Description:

The principal usage of the message.

Key:

12

Name:

CO.SECURITY

Spaces:

8

Columns:

36-43

Entries:

One of the following:

CLEAR

ON.LINE (on line encryption)

OFF.LINE (off line encryption)

Description:

The type of security afforded the message.

13

Name:

CO.DEADLINE.ACTION

Spaces:

9

Columns:

45-53

Entries:

DELETE or MESSENGER

Description:

Specifies the action to be taken when the deadline time

entered for Key 16 is reached before the message is trans-

mitted (delete or send by messenger).

Key:

14

Name:

CO.MEAN.TIME

Spaces:

3

Columns:

55-57

Entries:

Integer

Description:

For messages with a time duration stimulus, a value in

minutes representing frequency of transmission of messages.

For messages with CO.ACTION (Key 10) of JAM, the period of

time in minutes that the jammer is "on".

Key:

15

Name:

CO. PROCESSING. TIME

Spaces:

3

Columns:

59-61

Entries:

Integer

Description:

A value in minutes representing the interval between the $\,$

time a decision is made to send the message and when it is transmitted. It is also the interval between receipt of

the message and time it is acted upon.

' y:

16

Name:

CO.DEADLINE.TIME

Spaces:

3

Columns:

63-65

Entries:

Integer

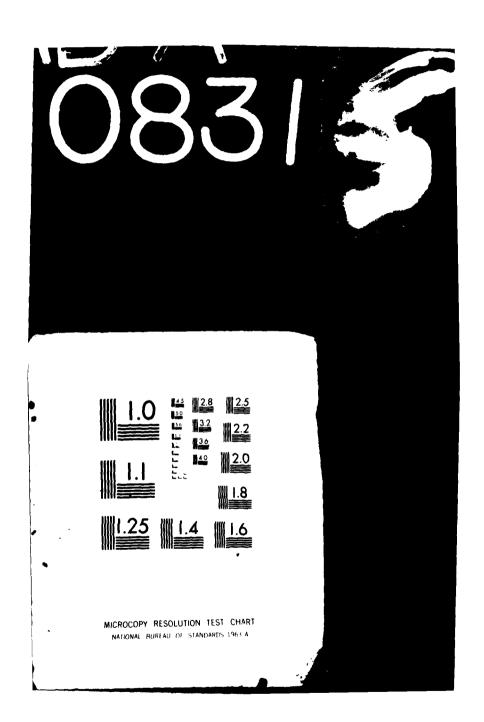
Description:

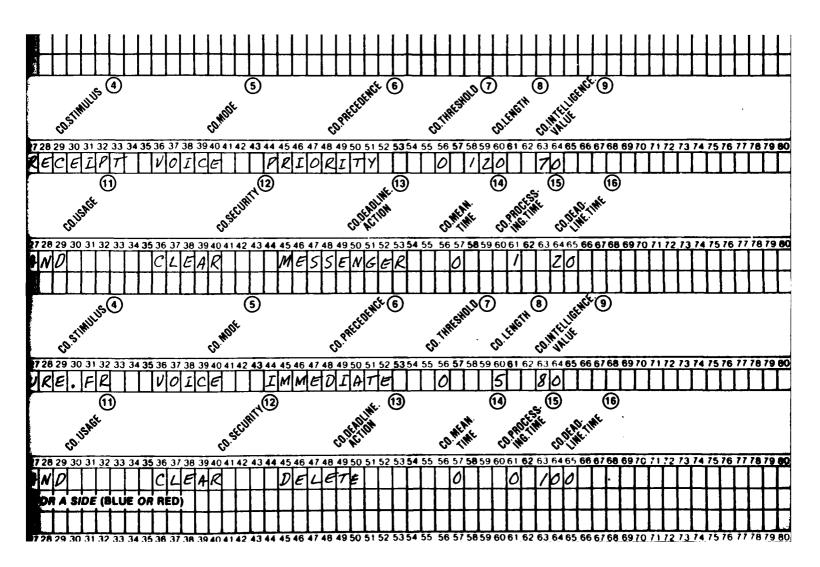
The period of time in minutes after which the alternative

action specified in Key 13 is taken.

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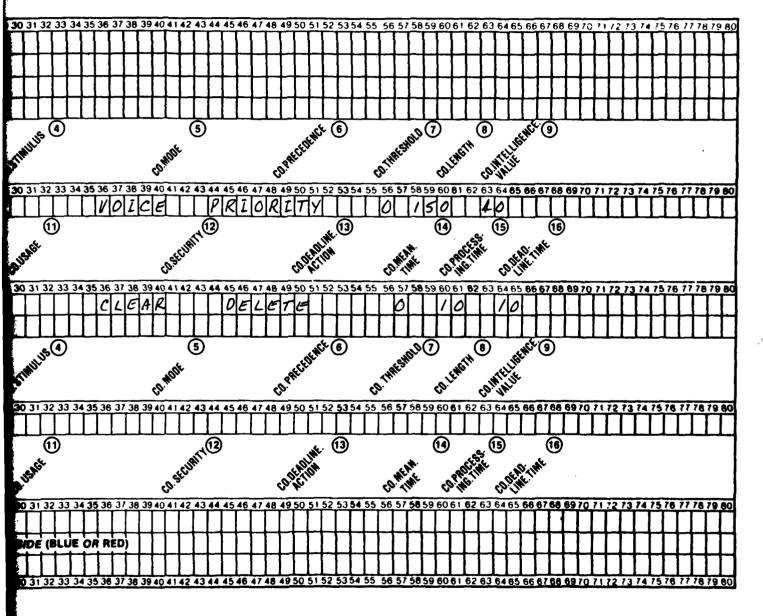
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DEWCOM MODEL

VII. ORDERS

MPUT DATA PREPARATION FORM

1. COMMUNICATIONS ORDERS



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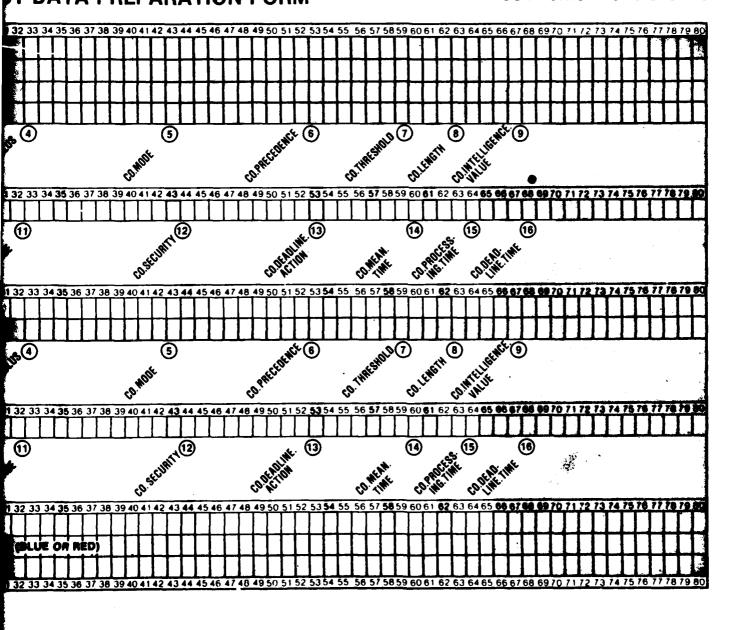
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EWCOM MODEL T DATA PREPARATION FORM

VII. ORDERS

1. COMMUNICATIONS ORDERS





3.6.21 Form VII.2 (ORDERS; EW Orders)

This form is used to describe electronic warfare orders employed by each side. Use separate sheets for each side (BLUE and RED) and additional sheets as required. Line out inapplicable keywords and spaces on each sheet so that all EW orders for a side are delimited by the side name (BLUE or RED) and the corresponding HALT; and all EW orders for the simulation are delimited by the keyword EW.ORDERS and the corresponding HALT.

Foldout samples of this form are located on page 181 and 183.

Key:

1

Name:

EWO. TARGET. NET

Spaces:

12

Columns:

7-18

Entries:

One of the following:

COMMAND

INTELL IGENCE

OPERATIONS

ADMIN.LOGIS

FIRE.DIRECT

SURVEILLANCE

AIR. REQUEST

CAS.COORD

CMMN

UNK NOWN

Description:

The type of opposing net against which specified

EW orders are to be carried out.

Key:

2

Name:

EWO.MIN.RANGE

Spaces:

3

Columns:

20-22

Entries:

Integer

Description:

The minimum distance in kilometers between the FEBA and the

opposing transmitter in order for the specified EW order to

be carried out.

Key.

3

Name:

EWO.MAA.RANGE

Spaces:

3

Columns:

24-26

Entries:

Integer

Description:

The maximum distance in kilometers between the FEBA and the

opposing transmitter at which a specified EW order can be

carried out.

Key:

4

Name:

EWO.DURATION.TIME

Spaces:

3

Columns:

28-30

Entries:

Integer

Description:

The period of time in minutes for which the specified

action is to be taken.

Key:

5

Name:

· EWO.FIRST.OPTION

Spaces:

11

Columns:

32-42

Entries:

One of the following:

INTERCEPT LOCATE BARRAGE. JAM

SPOT. JAM

Description:

The preferable EW function to be performed, if possible

within available time constraints.

6

Name:

EWO.SECOND.OPTION

Spaces:

11

Columns:

44-54

Entries:

The second second

One of the following:

INTERCEPT LOCATE BARRAGE. JAM

SPOT. JAM

Description:

The EW function to be performed if the first option cannot

be carried out. If no second option is desired, repeat the

first option in this space.

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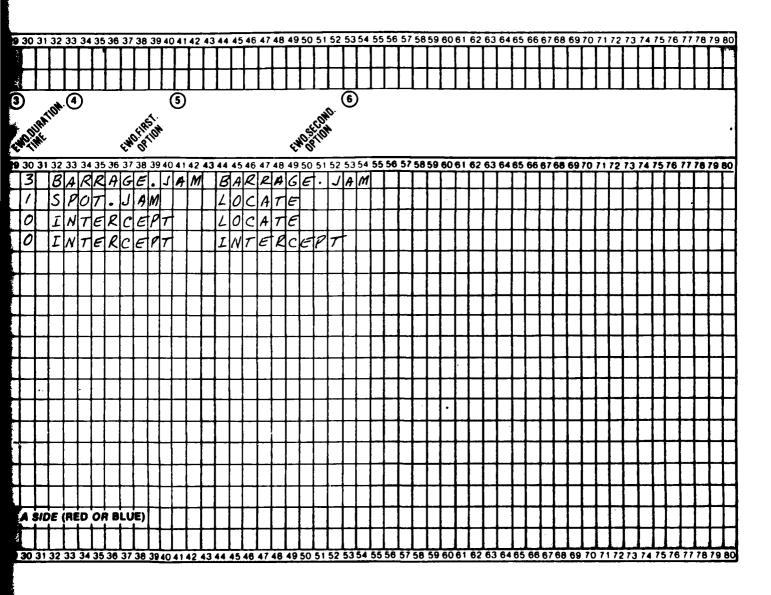
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VII. ORDERS

2. EW ORDERS

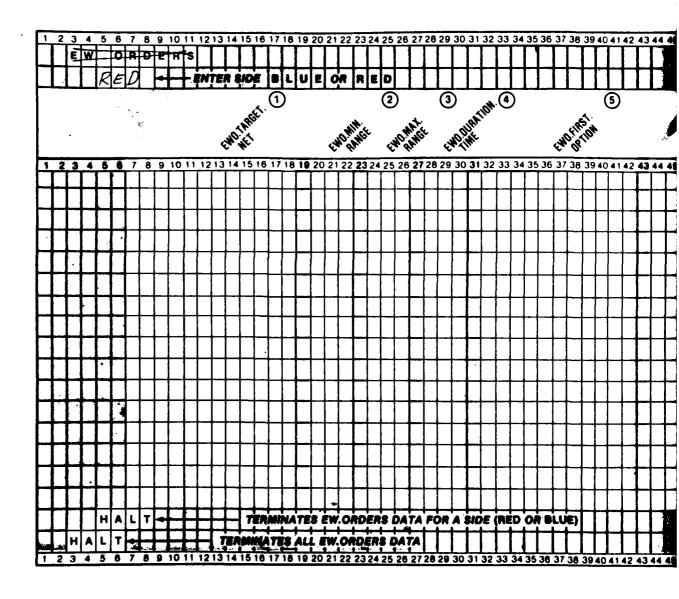


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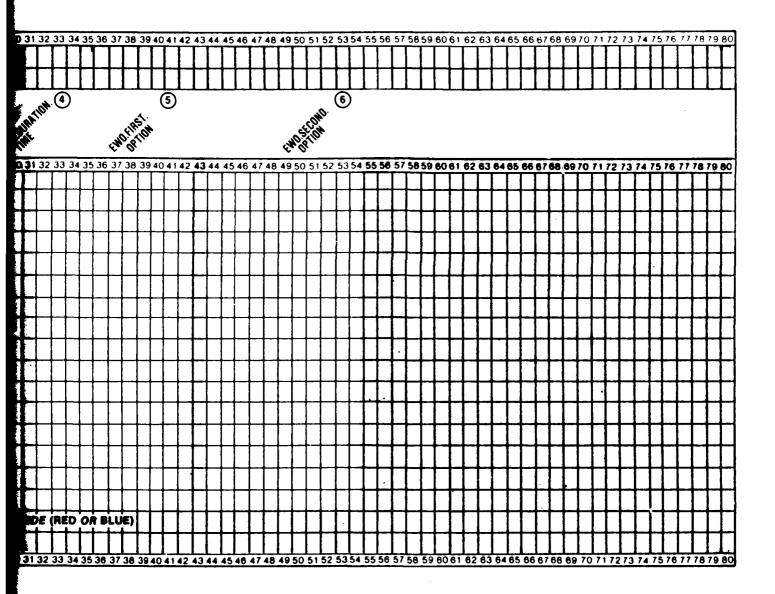
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VII. ORDERS

PUT DATA PREPARATION FORM

2. EW ORDERS



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3.6.22 Form VII.3 (ORDERS; Tactical Orders)

This form describes the tactical orders for each unit by side. Orders for the BLUE side are entered first, followed by the RED side. Each sheet has sufficient space for entering tactical orders for two units. Use additional sheets as necessary, lining out inapplicable keywords and spaces on each sheet so that all tactical orders for a side are delimited by the side name (BLUE or RED) and the corresponding HALT; and all tactical orders for the simulation are delimited by the keyword TACTIC. ORDER and its corresponding HALT.

Foldout samples of this form are located on pages 189 through 193.

Key:

1

Name:

UN. ID

UN. ACTIVE. TACTICAL. ORDER

Spaces:

UN. ID. - 4

UN.ACTIVE.TACTICAL.ORDER - 8

Columns:

UN. ID - 7-10

UN. ACTIVE. TACTICAL. ORDER - 12-19

Entries:

UN. ID. - Integer

UN. ACTIVE. TACTICAL. ORDER - One of the following:

ATTACK DEFEND MOVE WITHDRAW DELAY FOLLOW

Description:

The name of the tactical order the unit is to use when the simulation starts. If FOLLOW is entered, the unit will use the order of its superior unit. If FOLLOW is not entered, each UN.ID must be followed by a record for each of the 5 order types (ATTACK, DEFEND, MOVE, WITHDRAW, DELAY) ac-

cording to the instructions in Keys 3-9).

2

Name:

TO.RANGE

Spaces:

5

Columns:

18-22

Entries:

Integer

Description:

The distance in meters for which a tactical order is to be

carried out by a unit in a moving posture.

Key:

3

Name:

TO.AZIMUTH

Spaces:

3

Columns:

24-26

Entries:

Integer in the range 0 to 359

Description:

The direction in degrees (clockwise) from grid north in

which the tactical order is to be executed.

Key:

4

Name:

TO.TIME.DURATION

Spaces:

3

Columns:

28-30

Entries:

Integer

Description:

The time interval in minutes before the unit selects the

next order.

Key:

5

Name:

TO. STRENGTH. THRESHOLD

Spaces:

3

Columns:

32-34

Entries:

Integer in the range 0 to 100

Description:

A strength threshold percentage below which the FAILURE

order specified under Key #8 is immediately executed.

6

Name:

TO.ATTACK.FORCE.RATIO

Spaces:

3

Columns:

36-38

Entries:

Integer

Description:

The strength threshold ratio between friendly and opposing

forces above which any order being executed is immediately

changed to ATTACK.

Key:

7

Name:

TO. FAILURE. FORCE. RATIO

Spaces:

3

Columns:

40-42

Entries:

Integer

Description:

The strength threshold ratio between friendly and opposing

forces below which the FAILURE order specified under Key #9

is immediately executed.

Key:

8

Name:

TG.FAILURE.NEXT.ORDER

Spaces:

8

Columns:

44-51

Entries:

One of the following:

ATTACK DEFEND MOVE WITHDRAW DELAY

Description:

The order to be executed when the previous order results in

failure.

9

Name:

TO.SUCCESS.NEXT.ORDER

Spaces:

8

Columns:

53-60

Entries:

One of the following:

ATTACK DEFEND MOVE WITHDRAW DELAY

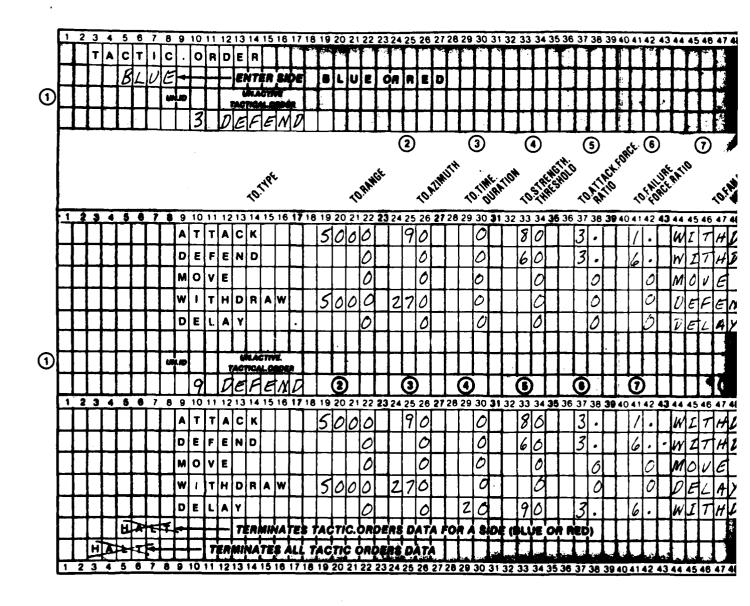
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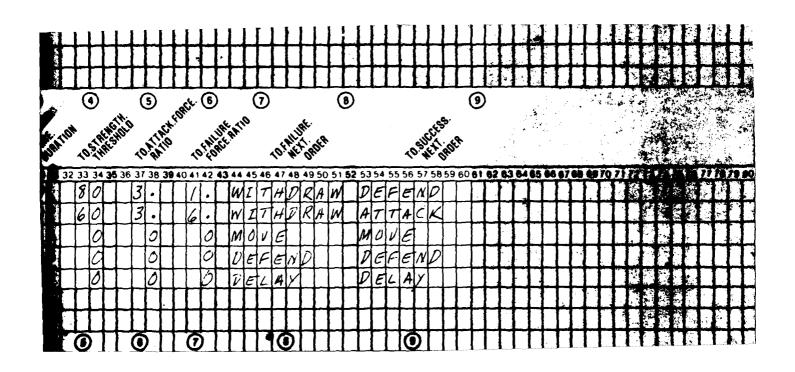
The order to be executed when the previous order succeeds.

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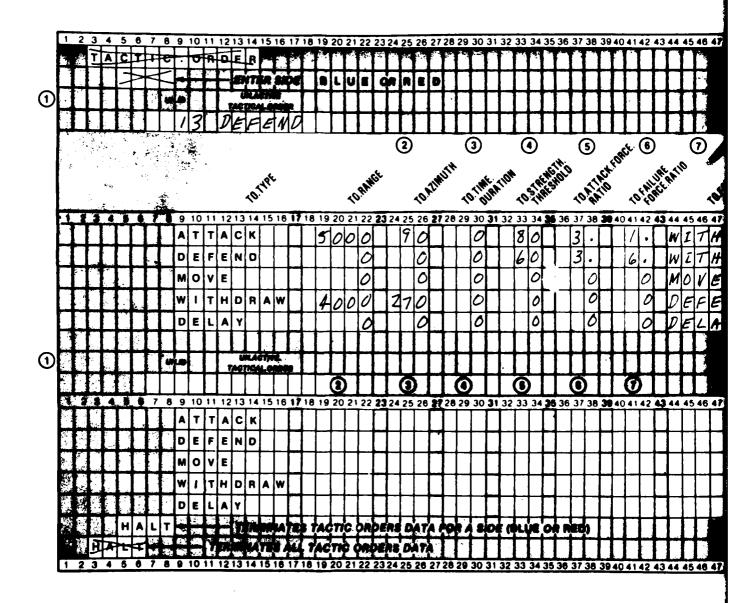




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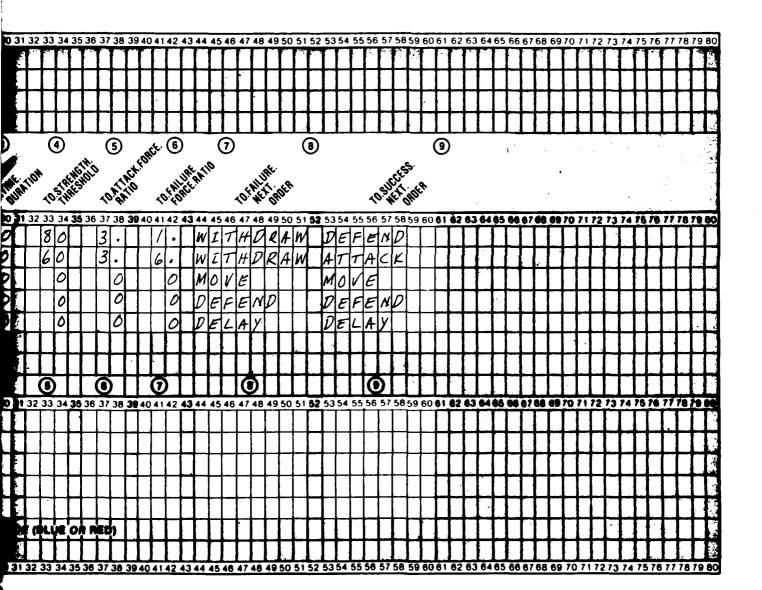
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VII. ORDERS

3. TACTICAL ORDERS



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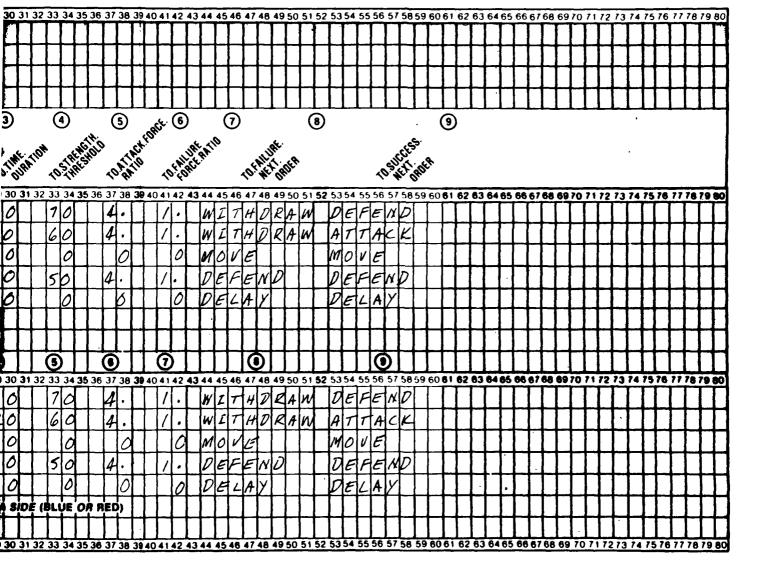
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DEWCOM MODEL

IPUT DATA PREPARATION FORM

VII. ORDERS

3. TACTICAL ORDERS





3.6.23 Form VII.4 (ORDERS; Posture)

This form describes combat posture data for each side (BLUE and RED) for each of five possible combat postures (ATTACK, DEFEND, MOVE, WITHDRAW, DELAY). A foldout sample of this form is located on the facing page.

Key:

1

Name:

CP. EFFECTIVENESS

Spaces:

3

Columns:

16-18

Entries:

Integer in the range 0 to 100

Description:

A value representing percentage effectiveness, which is

used to modify attrition coefficients.

Key:

2

Name:

CP. STRENGTH. THRESHOLD

Spaces:

3

Columns:

20-22

Entries:

none

Description:

The current version of the model does not use this vari-

able. It should be left blank.

Key:

3

Name:

CP.MEAN.TIME.MULTIPLIER

Spaces:

3

Columns:

24-26

Entries:

Integer in the range 0 to 100

Description:

A multiplier used to modify time duration specified under

Key 14 on the form VII.1.

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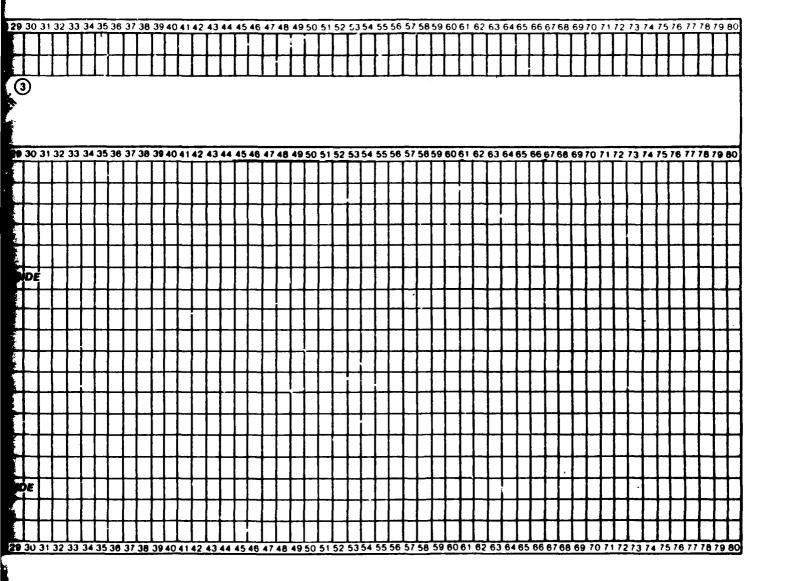
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DEWCOM MODEL

VII. ORDERS

4. POSTURE

NPUT DATA PREPARATION FORM



4.0 OUTPUT REPORTS

The output products available from the DEWCOM Model are divided into three major categories:

- o Input Data Reports
- o Model Reports
- o Ad Hoc Reports

The generation of any or all the available reports is at the option and under control of the user.

4.1 Input Data Reports

This group of reports provides the user with formatted listings reflecting actual data which was input to the model for the current run. The full simulation need not be run in order to produce these reports. In fact, one of their major uses is to permit a review of the input data for errors or omissions before a lengthy and costly simulation run is actually made.

The production of any or all Input Data Reports is controlled by the user at input time through entries in the REPORTS DATA section of DEWCOM Input Data Preparation Form I.1 (CONTROLS; Global Variables Data, Reports Data). Each Input Data Report number (1 through 7) entered in the appropriate blank spaces on Form I.1 results in the printing of a formatted report of the input data in the corresponding major category. The Input Data Reports are as follow:

Report	Major Data
#	Category
D1	CONTROLS
D2	TERRAIN
D3	EQUIPMENT
D4	TYPE UNITS
D5	COMBAT ORGANIZATION

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Because of the amount of data in various major input categories, some reports are shown in several parts, with related portions of the input data on each part. When a major category report is requested, all parts of that particular report are produced. The individual reports and their content are explained in the following subsections and a sample of each report format is included at the end of this section. The entire report is not shown in all cases due to the volume of data.

- 4.1.1 Report D1 (sample on page 211) reflects CONTROLS data input on Forms I.1 and I.2, including the following:
 - o Whether or not the simulation is to be started
 - o Identification numbers of the Data and Model reports which are to be printed
 - o Attributes of Blue and Red sides
 - o Global Variables.
- 4.1.2 Report D2 reflects TERRAIN data and is divided into 7 parts as follows:
 - 4.1.2.1 Report D2A (sample on pages 213-217) reflects mobility data input on Form II.1, including the following:
 - o X and Y coordinates of origin
 - o Size of each grid square
 - o Number of grid squares in the simulation
 - o Mobility indices of all grid squares in the simulation identified in terms of their X and Y offsets from the origin.
 - 4.1.2.2 Report D2B (sample on pages 219-223) reflects obstacle data input on Form II.2, includ:

- o X and Y grid coordinates of origin
- o Size of each grid square
- . o Number of grid squares in the simulation
 - Obstacle indices of all grid squares in the simulation identified in terms of their X and Y offsets from the origin.
- 4.1.2.3 Report D2C (sample on pages 225-231) reflects base altitude data input on Form II.3, including:
 - o X and Y grid coordinates of origin
 - o Size of each grid square
 - o Number of grid squres in the simulation
 - o Base altitude of each grid square
- 4.1.2.4 Report D2D (sample on page 233) reflects hill data input on Form II.4, including:
 - o X and Y grid coordinates of origin
 - o Size of each grid square
 - o Number of grid squares in the simulation
 - o for each hill,
 - Hill ID
 - X and Y grid coordinates of the center
 - Peak height in meters
 - Orientation angle in degrees from east
 - Eccentricity of the hill mass
 - Spread of the hill mass
 - Height of normal curve describing this hill
 - Cut
- 4.1.2.5 Report D2E (sample on page 235-237) contains hill summary data input on Form II.5, including:
 - o X and Y grid coordinates of origin
 - o Size of each grid square
 - o Number of grid squares in the simulation

- o ID numbers of all hills appearing in each grid square
- 4.1.2.6 Report D2F (sample on page 239) contains covers data input on Form II.6, including:
 - TO X and Y grid coordinates of origin
 - o Size of each grid square
 - o Number of grid squares in the simulation
 - o For each cover,
 - Cover ID
 - X and Y grid coordinates of the center
 - Height in meters
 - Orientation angle in degrees from east of an ellipse representing the cover
 - Length of the major axis of the ellipse in meters
 - Length of the minor axis of the ellipse
- 4.1.2.7 Report D2G (sample on page 241) contains covers summary data from Form II.6, including:
 - o X and Y grid coordinates of origin
 - o Size of each grid square
 - o Number of grid squares in the simulation
 - o ID number of all covers appearing in each grid square

- 4.1.3 Report D3 reflects EQUIPMENT data and is divided into 5 parts as follows:
 - 4.1.3.1 Report D3A (sample on page 243) reflects Equipment Damage Class data input on Form III.1. It includes the damage class value input for each class.
 - 4.1.3.2 Report D3B (sample on page 245) has a separate portion for each side (Blue and Red) and reflects Communications Equipment data input on Form III.1. For each item of communications equipment, the following information is included:
 - o Name
 - o Class
 - o Damage class
 - o Mean time between failures
 - o Mean time to repair
 - o Range
 - Jamming awareness.
 - 4.1.3.3 Report D3C (sample on page 247) has a separate portion for each side and reflects Electronic Warfare (EW) equipment input on Form III.2. For each named item of EW equipment, the following information is included:
 - o Name
 - o Class
 - o Damage class
 - o Mean time between failures (hours)
 - o Mean time to repair (hours)
 - o Range in meters
 - o DF time in seconds
 - o Intelligence rate

- o High limit of frequency range at which effective
- o Low limit of frequency range at which effective
- o Radar transmission/return duration
- o Radar interval between transmissions
- o Probability of safe arrival of expendable jammers
- o Probability of arrival on target of expendable jammers
- 4.1.3.4 Report D3D (sample on page 249) has a separate portion for each side and reflects Weapons data input on Form III.3. For each weapon listed, the following information is included:
 - o Name
 - o Combat value
 - o Damage class
 - o Range
 - o Attrition class
 - o Terrain effect
- 4.1.3.5 Report D3E (sample on page 251) has a separate portion for each side and reflects air sortie data input on Form III.4. For each type air sortie, the following information is included:
 - o Name
 - o Class
 - o Ground coordination requirement
 - o Transit time
 - o Loiter time
 - o Effectiveness
 - o Transit attrition rate
 - o Loiter attrition rate
 - o Renewal time

- 4.1.4 Report D4 reflects TYPE UNITS data and is divided into 5 parts and follows:
 - 4.1.4.1 Report D4A (sample on page 253) reflects type units separately by side, along with their attributes, as input on Form IV.1. For each type unit, the following information is included:
 - o Name
 - o Class
 - o Alternate CP existence
 - o Move Rate
 - o Radius
 - o Intelligence fade rate
 - o Maximum encryption capability
 - o Encryption factor
 - o Suppression factor
 - o Duration of suppression
 - o Artillery duration
 - o Artillery interval
 - o Communications setup time
 - o Communications teardown time
 - o EW equipment setup time
 - o EW equipment teardown time
 - o Tactical setup time
 - o Tactical teardown time
 - o EW priority
 - o IF priority
 - 4.1.4.2 Report D4B (sample on page 255) is an equipment listing for each type unit, and contains a separate portion for each side. It reflects data input on Forms IV.1 and IV.2 and includes, for each type unit:
 - o Type unit name
 - Name and quantity of each item of communications equipment

- o Name and quantity of each item of EW equipment.
- o Name and quantity of each type weapon
- 4.1.4.3 Report D4C (sample on page 257) lists attrition rates for each type of unit separately by side as input on Form IV.3. It includes type unit, attrition class, and percent attrition rates per combat day under a variety of force ratio ranges as well as for a non-combat situation.
- 4.1.4.4 Report D4D (sample on page 259) reflects the desirability of firing each type weapon of the opposing side at each type unit class. A separate portion is produced for each side, and the information corresponds to that input on Form IV.3.
- 4.1.4.5 Report D4E (sample on page 261) reflects performance degradation and sector width information separately for each side, as input of Form IV.3. A performance degradation factor is shown for each type unit class for each combat posture for various levels of cumulative attrition.

- 4.1.5 Report D5 (sample on page 263) reflects unit COMBAT ORGANIZATION data for each side, and contains information input on Forms V.1, V.2, and VI.1. Within each side, it provides the following for each unit:
 - o Unit ID
 - o Unit name
 - o Type unit
 - o X and Y grid coordinates of location
 - o Superior unit ID
 - o Unit IDs of subordinate units
 - o Communications link IDs
 - o Air sorties by type and number.

- 4.1.6 Report D6 reflects COMMUNICATIONS ORGANIZATION data and is divided into 2 parts as follows:
 - 4.1.6.1 Report D6A (sample on page 265) reflects communications nets and links separately for each side, as input on Form VI.1. For each communications net, the following information is included:
 - o Type
 - o Model
 - o Security
 - o Usage
 - Continuous carrier indication
 - o Primary and secondary frequencies
 - o Each link in the net, including
 - Link ID
 - Unit IDs of each end
 - Type equipment at each end
 - Whether one or two way
 - Desirability of use
 - Conversion time
 - Number of channels
 - Convertability
 - Switchability
 - Jammability
 - Compound link indicator
 - 4.1.6.2 Report D6B (sample on page 267) reflects data for compound links, separately by side, as input on Form VI.2. It includes the Net ID, the identity of each compound link in the net, and the ID of every unit in the compound link.

- 4.1.7 Report D7 reflects ORDERS data and is divided into 4 parts as follows:
 - 4.1.7.1 Report D7A (sample on page 269) reflects communications orders for each originating unit separately by side, as input on Form VII.1. It identifies the type unit of the origin, and for each, the following information for each order:
 - o Destination
 - o Stimulus for transmission of the order
 - o Mode
 - o Precedence
 - o Threshold for transmission
 - o Length
 - o Intelligence value
 - o Action to be taken based on message
 - o Usage
 - o Security
 - o Deadline action
 - o Frequency of transmission
 - o Processing time
 - o Deadline time
 - 4.1.7.2 Report D7-B (sample on page 271) lists EW order information separately by side, as input on Form VII.2. For each type of opposing net against which the EW order is to be executed, the following are included:
 - o Minimum range for execution
 - o Maximum range for execution
 - o Duration
 - o The preferable EW function to be performed
 - o The function to be carried out in the event the preferable one cannot be carried out

- 4.1.7.3 Report D7-C (sample on page 273) lists tactical orders separately by side, as input on Form VII.3. for each unit on the side, the following are reflected:
 - o Unit ID and name
 - o Active order
 - o For each combat posture order,
 - Range
 - Azimuth (direction)
 - Duration
 - Strength threshold for failure order
 - Attack force ratio
 - Failure force ratio
 - Failure order
 - Success order
- 4.1.7.4 Report D7-D (sample on page 275) lists the combat postures for both sides and, for each posture, the following:
 - o Effectiveness
 - o Strength threshold for order change
 - o A multiplier to modify time duration

DEVELOPED BY

CACI, INC. - FEDERAL 1815 NORTH FORT MYER DRIVE ARLINGTON, VIRGINIA 22209

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DIVISIONAL ELECTRONIC WARFARE COMBAT MODEL

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CONCEPTS ANALYSIS AGENCY

US ARMY

INPUT DATA REPORTS

REPORT D1 PAGE 1

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REPORTS TO BE PRINTED

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SIDE ATTRIBUTES

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OKIGIM 454000 602000 Size of Gaid Scuare = 1000 meters Hap is 80 by 40 grid Squares

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COORUINATE	CENTER	×	

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ERRAIN	SUMMARY
TE	COVCR

REPORT U2-G Page 59

UKIĞIN 454000 602000 SIZE CF GRID SÜLARE = 1000 METERS MAP IS 80 BY 40 GRID SÇUARES	COORDINATE OF GRID SQUARE = ORIGIN + LUFFSET + GRID SIZE!	
UFFSET A Y1D NUMBERS OF COVERS APPEARING IN GRIO X,Y	DFFSET X Y 10 NUMBERS OF COVERS APPEARING IN GRID X.Y	

NU COVERS WERE INPUT

-- 10 NUMBERS OF

OFFSET X Y

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VALUE	00000
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HOURS)

MTBF (HGURS) DAMAGE CLASS CL ASS

RANGE (METERS)

999

YES YES YES

20000 20000 20000

RACIO RACIO RADIO

RAD IC. 1 RAD IC. 2 RAD IC. 3

NAME

BLUE *

03-C 4	RADAR EXPENDABLE JAMMERS INTERVAL PROB - SAFE PROB - ARRIVE (MIN) ARRIVAL ON TARGET	00
REPORT 03-C PAGE 4	RADAR EXPENDABL INTERVAL PROB - SAFE (MIN) ARRIVAL	00
	RADAR INTERVAL (MIN)	000
	RADAR DURATION (MIN)	001
	FREG	20,02
TN.	DF HIGH LOW TIME INTEL FREG FREG (SEC) KATE (MHZ) (MHZ)	0 35 15 0 25 20 10 4000 3000
EQUIPMENT EW EQUIPMENT	INTEL	000
33 33	DF TIME (SEC)	000
	DAMAGE MTBF MTTR RANGE LLASS (HR) (MR) (METERS)	10000 10000 20000
	E TTR	772
	GE MTBF	∞ ∞ ∿
	DAMA GE LLASS	
	CLASS	NL.SPOT NL.BARRAGE Rajar
* BLUE *	NAME CLASS	JAMMER.1. NL.SPO JAMMER.2 NL.BARI RADAK.TYPE.1 RAJAR

			EQUIPME	N			
*****			WE APONS	s			
* 8FD *							
•		CUMBAT	DAMAGE	RANGE	ATTRITION	TERRAIN	
*****	NAME	VALUE	CLA SS	(METERS)	CLASS EFFECT	EFFECT	
	T ANK. A	15	0	1000	HEAVY	YES	
	7 . 70	<u>.</u>	·	3000	MF A VV	<u>۷</u> ۲	

*				EQU TYPE A	EQUIPMENT TYPE AIR SCATIES	ES			REPORT 03-E Page 8
BLUE	NAME	CLASS	G KGUND COUKO I NAT I ON	TRANSIT LUITER TIME TIME (MIN) (MIN)	LUITER TIME (MIN)	EFFEC- TI VENESS	TRANSIT A ITRI TION	LOITER	RENEWAL TIME (MIN)
	AAH TAC.AIR.1	ROTARY	YES	30	200	04	00	0:	300

BLUE * KE	###### J ;	2 - 4 - 5 - 7	ATE CP 1GENCE SSION I NTERVA AL TEA	ש מַ בּאַ	ADE RATE CIUR ININI ININI Dan TIME	N 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		AND SECOND	TYPE UNITS ATTRIBUTE VALUES B = MOVE RATE (METERS E = MAX ENCRYPTION CAP H = DURATION OF SUPPRE K = COMM SETUP TIME (M N = EW TEARDOWN TIME (Q :: EW PRIORITY F G I	NATE AND AND AND AND AND AND AND AND AND AND	CHES CHETERS CHETERS CHESTION CAPABILON CAPABILON CAPABILON CAPABILON CHESTION CHEST	A S A F	MINUTE B 11 117 11 0N (MI) N)	ا لـ چ	OF-13K E C	REPORT PAGE RADIUS (METERS ENCRYPTION FAC ARTY DURATION CUMM TEARDOWN TACTICAL SETUP IF PRIORITY N O P	REPORT PAGE I METERS UNATION FAC UNATION FAC ORITY		DE-A I TIME TIME O	1
DIV I S 10N.HQ		D I V . HO	o z	200	200	•	10	01	ß	s	50	7	20	13	20	15	30	20	20	141
BKIGADE. HO		9.	Z	200	200		2	2	S	S	S,	7	20	51	50	2	30	20	Z	"
BATTALION-H		ã	2	200	200	-	01	9	Ś	2	20	7	20	2	50	5	30	20	3	30
MECH.CO		EUVER	Q N	200	200	~	2	2	Ś	Š	20	7	50	15	20	15	30	20	3	"
AKMUK CD		EUVER	Z	2 30	200	-	0.1	10	S	Ś	20	7	20	57	20	57	30	20	50	.,1
FIRE CONTROL			2	200	200	_	7.0	10	^	5	20	7	20	15	20	15	30	20	20	•••
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HUNI TZERS	ART	ARTILLERY	S S	200	200	-	07	0	S	•	8	7	20	2	20	2	30	20	Š	

		EQUI	TYPE UNITS EQUIPMENT LISTS			REPORT D4-
TYPE UNITS	COMMUNICATIONS	IONS	3.	ļ	WEAPONS	
DI VI SI ON. HQ	RADIO.1 Radio.2	% %	JAMMER.1	7 1		
BRIGADE.HQ	RADIO.1 RADIG.2	20	NONE		NONE	
BATTAL ION . HO	RADIO. 3	~	NONE		NONE	
MECH.CD	RAD10.3	~	NDNE		APC-1 17	
ARMOR.CO	RADIO.3	8	NONE		TANK.1 17	
FIRE, CONTROL	RADIO.3	7	NONE		NONE	
RADAR	RA010.2	-	RADAR.TYPE.1	-	NONE	
HOWITZERS	RADIU.2	7	NONE		HOWI TZERS 18	

* *				PERCE	TYPE UNITS PERCENT ATTRITION RATES PER COMBAI DAY	VITS ITION RATE DAY	ATES				REPORT PAGE	87 D4-C
KED **					ŭ i	FURCE KA	RATIO RANGES	GES				
TYPE UNIT	ATTRITICN CLASS	COMON	UP TO 1/5:1	1/4:1	1/3:1	1/2:1	1:1	2:1	3:1	4:1	5:1	ABOVE 5:1
ĝ	LIGHT	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
COKPS.HQ	L1GHT HEAVY	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
D1V.HQ	L1GMT HEAVY	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
вре. но	L I GHT HEAVY	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
REGT.HO	L 1GHT HEAVY	2.40	2.40	2.40	2-40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
BN. HQ	LIGHT HEAVY	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
он.00	L I GHT HE AVY	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
ALT.CP	LIGHT	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
FDC	LIGHT HEAVY	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
ARTILLERY	L I GHT HEAVY	2.40	3.36 8.30	3.36	3.36 12.40	3.36	3.36	3.36	3.36	3.36	3.36	3.36
MANEUVER	LIGHT HEAVY	5.00 3.00	4.20 5.6 0	7.98	10.64	13.32	13.32	13.32	13.32	13.32	13.32	13.32 14.00
SUPPORT	LIGHT	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
EM.UNIT	L IGHT HEAVY	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
COMM.UNIT	L I GHT HEAVY	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
OTHER	L IGHT HEÁVY	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40

C - HOWITZERS

BLUE WEAPONS

TYPE UNIT

HEAPEN NAMES

259

681 681 681 681 681 681 681 681 681

CCCRPS.HQ BULV.HQ BULV.HQ RECT.HQ BN.HQ CCU.HO ANTILLERY MANEUVER SUPPORT CCMM.UNIT

•			_	PERFUR	TYPE PERFURMANCE SECTUR	UNITS DECKAD WIDTHS	UNITS DECKADATION WIDTHS	8						REPORT PAGE	T D4-E 9	
							CUMUL	AT I VE	CUMULATIVE ATTRITION	1110	_					
TYPE UNIT	POSTURE	WIDTH (METEKS)	8	101	151	20%	25%	30%	35%	¥0,	454	205	554	109	65# AND ABOVE	
g	ATTACK DEFEND MOVE WITHDRAW DELAY	00000	1000	90	86 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	00000	32772	00000	00000	00000	00000	00000	00000	00000	00000	
CORPS.HQ	ATTACK DEFEND MOVE WITHDRAM	00000	00000	0001	86666	4 8 4 4 8 0 0 0 0 0	02000	00000	20000	00000	00000	00000	00000	00000	00000	
D1V•HQ	ATTACK DEFEND MUVE WITHDRAW DELAY	00000	1000	0001	86.396	00000	32222	00000	00000	00000	00000	99999	00000	00000	00000	
вое.на	ATTACK DEFEND MUVE WITHDRAM	00000	900000	90 100 100 100 100	8 6 6 6	00303	22222	00000	00000	00000	00000	00000	00000	00000	90000	
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CO.HQ	ATTACK DEFEND MUVE WITHDRAW DELAY	00000	1000	00000	9 9 9 9 6	9 8 8 8 8	50 70 70 70 70	9999	00000	00000	00000	00000	00000	00000	00000	

*****				COMBAT OR ANIZATION	NIZATION				REPORT	2T 05
kE0	• • •			SLINO	so.				PACE	
10	** NAME	TYPE UNIT	COURDINATES X Y	SUP	SUBORDINATE Unit Ids		FINK 10S	S 0 1		AIR SORTIES
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-	DH.VIO	DI VI S I GN. HQ		O NONE	2 3	10001	70007			NONE
~	KEGT.HO.1	KEGIMENT.HD		-	4	20001	50005	70001		NONE.
. *)	REG1.HU.2	REGIMENT. HU			9	10009	60002	70007		NONE
•	BN. MC. 1	BATTAL ION.HO	51 0000 638000		8	10001	10001	10003	10004	NONE
					16 17	50001				
S	BN.HQ.2	BATTAL ION.HO	210000 636000	7	10 11	20001	20002	20003	20004	NONE
					18 19	50005				
•	BN.HQ.3	BATTAL ION . HO	510000 618000	<u>ه</u>	12 13	30001	30005	30003	30004	NONE
					20 21	10009				
_	8N.HQ.4	BATTAL ION . HO	510000 616000	9	14 15	10004	40005	40003	40004	NONE
					22 23	60002				
4 0	TANK.CO.1	TANK.CC		4	NON	10001				NONE
σ	TANK.CO.2	TANK.CO		*	NONE	10002				NCNE
2	TANK.CC.3	TANK. CG	505000 636000		NONE	20001				NONE
1	TANK. CO. 4	TANK.CO		9 2	NONE	20002				NONE
12	TANK. CO.5	TANK.CD	505000 620000	9	NONE	30001				NONE
13	TANK.CO.6	TANK.CD	505000 618000	ن ه	NONE	30005				NONE
14	TANK.CO.7	TANK.CO		<u>0</u>	NONE	10004				NONE
15	TANK.CO.8	TANK. CD		-	NONE	40002				NONE
91	MK.CO.1	MK.CO	200000 640000	4	NONE	10003				NONE
17	MR.CO.2	MK.CO		3	NONE	10004				とことに
18	MR.CG.3	MR.CO			NONE	20003				NONE
6	MR.CO.4	MR.CO	>00000 634000	0 5	NONE	20004				NONE
50	MR.CU.5	AR.CO		9 0	NONE	30003				NONE
77	MR.CD.6	MR.CO	500000 618000	9	NONE	30004				NONE
22	MR.CO.7	MR.CO		^	NC NE	40003				NONE
23	MR.CO.8	MR.C0		^	NONE	40004				NONE

•	4			COMMUN	ICATI NETS	ONS S	COMMUNICATIONS ORGANIZATION NETS AND LINKS	z			æ &	REPORT PAGE	T 06-,	4		
· • • • •	BLUE * KEY	420	DIRECTION NUMBER OF CHANNELS JAMMABILITY	ø	# # # 60 43 T	DES 1R	DESTRABILITY CUNVERTABILITY CGMPUUND LINK	C = TIME TO CONVERT F = SWITCHABILITY	CONV		N I H					
NET 10	† 	NET ATT	RIBUTES	L INK I DS	END	E B B	A END EQUIPMENT	B END EQUIPMENT	4	8	ن د	٥	w	4	9	Ŧ
10000	D TYPE MODE SECURITY USAGE CUNTINUOUS CARRIER PRIMARY FREQ (MHZ) SECONDARY FREQ(MHZ)	(RIER (MHZ)	RADIO VOICE CLEAR COMMAND NG B 30	10001 10002 10003	W 4 M	ммм	RADIO.3 RADIC.3 RADIO.3	RADIO.3 RADIU.3 RAUIU.3	 	100	000		999	YES	YES YES	0 2 2 2 2 2
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0000	TYPE MODE SECURITY USAGE CENTINUOUS CARTER PRIMARY FREQ (MHZ)	(RIER (MHZ)	# RADIO # VOICE # CLEAR # CUMMAND # 34 # 35	30001	w 4	44	RADIO.3 RADIU.3	RADIO.3 RADIO.3	E E	100	00		0 0 2 0	YES	YES	8 3 8
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м	REGT.HQ.2	DEFEND	ATTACK DEFEND MOVE WITHDRAW DELAY	6000 5000 1000	270 0 270 90 0	20020	44 60 60 60 60 60	00.00	1.00	WITHDRAW WITHDRAW DEFEND DEFEND DEFEND	DEFEND ATTACK DEFEND OEFEND DELAY
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٥	BN. HQ.3	DEFEND	ATTACK DEFEND MOVE WITHURAW DELAY	00001	270 0 0 96	00000	55052	4.0 0.0 0.0 0.0	1.00	WITHDRAW WITHDRAW MGVE DEFEND DELAY	DEFEND ATTACK MGVE UEFEND UELAY
-	BN. HQ.4	DEFEND	ATTACK DEFEND MCVE WITHURAW OELAY	6000 0 0 0 0 0 0 0 0	270 0 0 0 90	00000	0.300%	4.00 .00 .00 .00	00.00	WITHDRAW WITHDRAW MUVE DEFEND DEFEND	DEFEND ATTACK MOVE DEFEND DEFEND

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4.2 Model Reports

This group of reports provides the user with the status of various model factors reflecting the effects of the simulation. The reports reflect the model status at the beginning of the simulation, at intervals specified by the user at input time and at normal termination of the simulation.

Production of any or all the Model Reports is controlled by the user at input time through entries in the REPORTS DATA section of DEWCOM Input Data Preparation Form I.1 (CONTROLS; Global Variables Data, Reports Data). Each Model Report number (1 through 7) entered in the appropriate blank spaces on Form I.1 results in the printing of a corresponding report, as follows:

Report #	<u>Title</u>
M1	Unit Status
M2	Link Status
M3	Message Status
M4	Attrition Summary
M5	EW Status
M6	Equipment Status
M7	Intelligence Logs

The desired reports are produced at the interval specified by the user in the "REPORT.FREQUENCY" entry (Key #14) on Form I.1, and the simulated time is reflected on each. The Model Reports are explained in the following subsections, and a sample of each report format is included at the end of this section.

4.2.1 Report M1 (Unit Status) reflects status of all units on a side with a separate part produced for each side (sample on page 281). For each unit, the following information is listed:

PRECEDING PAGE BLANK-NOT FILLED

- o Unit ID and name
- O Type unit
- O X and Y grid coordinates of location
- o Strength
- o Force ratio
- o Artillery status
- o Active tactical orders
- Number of units in contact list
- O Number of units in indirect fire target list
- Number of messages in message list
- 4.2.2 Report M2 (Link Status) is produced separately for each side, and reflects the status of all communications links (sample on page 283). The report includes the following information for each net on a side:
 - o Net ID
 - Communications frequency (megahertz) in use
 - o ID of each link in the net, along with the following:
 - Unit ID of each end of the link
 - Link status
 - Number of channels available and in use
- 4.2.3 Report M3 (Message Status) is produced separately for each side and reflects the status of all messages (sample on page 285). The report includes the delay time affecting all messages due to the volume of message traffic, as well as the following:
 - o ID of communications order
 - o Originating Unit ID
 - o Transmitting Unit ID
 - o Destination ID
 - o Status
 - o Usage
 - o Mode
 - o Message length
 - o Minutes to deadline time

- 4.2.4 Report M4 (Attrition Summary) is produced separately for each side (sample on page 287). It contains the following information concerning each item of equipment within equipment type:
 - o Equipment name
 - o Original quantity
 - o Quantity destroyed
 - o Quantity remaining
 - o % remaining
 - o Killed by direct fire
 - o Killed by indirect fire
 - o Killed by close air support
- 4.2.5 Report M5 (EW Status) consists of two parts, Actions in Progress and Awaiting Action. Each part is produced separately for each side, and contains the following information:
 - 4.2.5.1 EW Status Actions in Progress (sample on page 289)
 - o Unit ID
 - o Action
 - Opposing side target Unit IDs
 - 4.2.5.2 EW Status Awaiting Action (sample on page 291)
 - o IDs of opposing side units awaiting EW action
 - o Equipment triggering action
 - o Priority
- 4.2.6 Report M6 (Equipment Status) consists of three parts, Communications Equipment, EW Equipment, and Weapons (sample on pages 293-297). Each part is produced separately for each side, and contain the following information for each unit:

- o Unit ID and Unit Name
- o For each equipment name within type, the original quantity and the quantity currently remaining.
- 4.2.7 Report M7 (Intelligence Log) is produced separately for each side (sample on page 299). It reflects the ID of each unit on a side which has intelligence information relating to opposing side units. Entries include the ID of the opposing side units about whom intelligence information is possessed, and the value of the information.

					UNIT	UNIT STATUS				REPORT	#1
:				SIMUL	SIMULATION TIME	•	HOUKS	•		PAGE	2
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ç	BN .Hú.2	BATTAL ION . HO	510000	636030	0	•	1	DEFEND	0	0	>
ه ۵	BN.HO.3	BATTAL ION . HO	510000	618000	0	·°		DEFEND	0	G.	0
1	4.0H.110	BATTAL ION . HQ	510000	616300	0	• •		DEFEND	0	0	o (
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· O	TANK.CU.2	TANK.CO	505300	638000	0	•		UE+ END	0	0	9 (
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23	MK.CO.3	MR.CU	500000	€14000	0	ċ	-	OEF END	0	0	5

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٠.		٠ ٦	• 4		FEING	PRUCESSED	CUMMAND	VOICE	150	20

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	EQUIPMENT NAME	ORIGINAL QUANTITY	GUANTITY DESTROYED	QUANTITY REMAINING	Z KEMAINING	KILLED BY DIRECT FIRE	KILLED BY INDIRECT FIRE	KILLED BY
	COMM EQUIPMENT							
	RADIG.1 RADIG.2 RADIG.3	8 7 18	000	8 7 8	100	000	00 0	
	EW EQUIPMENT							
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	WEAPONS							
	APC.1 TANK.1 HUMITZERS	51 51 18	000	51 51 18	001 100 100	000	000	
	AIR SORTIES							
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KED UNITS ANAITING EW ACTION
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9	ARM. Cu.1		17/ 17			
3	ARM.CU.2		17/ 17			
01	ARM.CU.3		17/ 17			
• 13	AKTY.F.1			18/18		

REPORT M	PAGE		10 VALUE 10 VALUE 10 VALUE	
			ID VAL	
	HOURS			
INTELLIGENCE LCGS	SIMULATION TIME = 0.	UNIT	10 ID VALUE 10 VALUE 10 VALUE 10 VALUE	NO UNIT ON RED SIVE HAS ENTRIES IN ITS INTELLIGENCE LOG
***	* PED *	•		

4.3 Ad Hoc Reports

Recognizing that all report requirements cannot be foreseen in advance of development of a system, provision is made for special or one-time reports to be produced from the DEWCOM Model through the use of the QWICK QWERY system.

The QWICK QWERY data analysis and report generation system was created to allow managers and programmers to selectively access and display information from existing data files. It reduces the costs and delays associated with problem definition, system analysis, and the coding, testing, modification, and debugging of special purpose programs. QWICK QWERY provides the means for timely retrieval and display of existing but frequently inaccessible information, satisfying the following requirements:

- o It allows the rapid generation of ad hoc reports without much of the usual programming delays.
- o It is a powerful report design tool. Different report formats, sorting sequences, attribute selections, and subtotals can be conveniently tried until the desired report is produced.
- o It allows report requests to be made directly by the end user, avoiding the frequent miscommunications concerning what exactly is needed or desired.

The QWICK QWERY system provides the DEWCOM military analyst with a very powerful and convenient analysis and report generation capability. User convenience is attained through three simple report and request forms. Form 1 provides for the selection of specific data items from a record and specific records from a file. It also provides for sorting and subtotal calculation. Form 2 is used when new data items are to be computed as a function of existing data items. It also provides the capability to do selective counting and index-

ing. Form 3 provides the option of conveniently laying out the generated report in the desired format.

The elements of the DEWCOM-QWICK QWERY interface are reflected on the diagram on the facing page and are organized as follow:

- o The QWICK QWERY file produced by the DEWCOM Model
- O A set of standard queries to provide standard reports
- o The provision for ad hoc queries to provide other required reports.

4.3.1 DEWCOM QWICK QWERY File Structure

The DEWCOM Model writes transactions on unit 12 in routine QQ. OUTPUT. The file is a standard output file.

4.3.2 Standard Queries

Standard Queries for the transaction file may be stored and used as needed.

4.3.3 Special (nonstandard) Queries

The special queries for the transaction file are normally used to meet a specific need and are not retained.

5.0 RUN INSTRUCTIONS

The Programmer Manual contains a full set of run instructions for the model. It is suggested that these be retained in a START file on the computer system and used as needed.

APPENDIX A

GLOSSARY OF TERMS

ACKNOWLEDGEMENT

A message from the addressee informing the originator that his communication has been received and understood. (FM 24-1)

ADDRESSEE

The activity or individual to whom a message is directed by the originator. Addressees are indicated as either "ACTION" or "INFORMATION". (FM 24-1)

ADDRESS INDICATING GROUP

An address group which represent a specific set of action or information addressess. (FM 24-1)

AREA SIGNAL CENTER

This signal center provides communications to units within its assigned geographical area of responsibility. This ties the units into the area communications system and supplements their organic means for communications with higher, subordinate, or adjacent headquarters. (FM 24-1)

ATTENUATION

Decrease in strength of a signal, beam, or wave as a result of absorption of energy and of scattering out of the path of a receiver. (FM 24-1).

AUTOMATIC CENTRAL OFFICE

A switch at which communications between subscribers is effected without the intervention of an operator. The electronic switches are controlled by the operation of a keysender on the instrument of the originating subscriber. (FM 24-1)

AUTOMATIC DATA PROCESSING SYSTEM

Automatic Data Processing Equipment linked together by communication and data transmission equipment to form an integrated system for the processing and conveyance of data. (FM 24-1)

BARRAGE JAMMING

The jamming of several channels or frequencies simultaneously. (FM 24-1)

CHAFF

Radar confusion reflectors, which consist of thin, narrow metallic strips of various lengths and frequency responses, used to reflect echoes for confusion purposes. (FM 24-1)

CHANNEL

A facility for telecommunications on a system or circuit. The number of independent channels on a system or circuit is measured by the number of separate communications facilities that can be provided by it. (FM 24-1)

CIPHER, OFF-LINE

A method of encryption which is not associated with a particular transmission system and in which the resulting cryptogram can be transmitted by any means. (FM 24-1)

CIPHER, ON-LINE

An automatic method of encryption associated with a particular transmission system, whereby signals are encrypted and passed directly through the line to operate the reciprocal equipment at the distant station. (FM 24-1)

CIRCUIT

An electronic path between two or more points capable of providing a number of channels. (FM 24-1)

COMMAND POST

A headquarters for a unit from which command and control is centrally exercised. (FM 24-1)

COMMAND SIGNAL CENTER

This signal center provides communications for command and control at division and corps headquarters and to units located in the immediate area as facilities permit. (FM 24-1)

COMMAND SYSTEM

A communications network which connects an echelon of command with some or all of its subordinate echelons for the purpose of command and control. (FM 24-1)

COMMON-USER CIRCUIT

A circuit allocated to furnish communications paths between switching centers to provide communications service on a common basis to all connected stations or subscribers. 24-1)

OPERATION INSTRUCTIONS

COMMUNICATIONS-ELECTRONICS A series of orders issued for the technical control and coordination of the signal communications activities of a command. (FM 24-1)

COMMUNICATIONS NODAL CONTROL ELEMENT

A dual function facility that incorporates both facilities control and technical control requirements. The technical control element contains patching, testing, conditioning, and monitoring equipment and provides technical control or circuits in and through the facility. The management element provides management and control of C-E functions within the node. (FM 24-1)

COMMUNICATIONS SYSTEM

Provides actual focal point for dynamic control, acts as operations center for command system, and directs organic and subordinate C-E systems. Maintains the data base. Replaces the term SYSCON. (FM 24-1)

CONTINUOUS WAVE

Morse Code transmissions achieved by on and off keying of an unmodulated carrier wave, or by the keying of a modulating subcarrier wave with the carrier suppressed. (FM 24-1)

DATA LINK

A communication link suitable for transmission of data. (FM 24-1)

DIAL CENTRAL OFFICE

A switch at which communications between subscribers is effected without the intervention of an operator, by means of relays set in motion by the operation of a dial on the instrument of the originating subscriber. (FM 24-1)

DIVERSITY SYSTEM

A system of communications in which a single received signal is derived from a combination of, or selections from, a plurality of transmission channels or paths. (FM 24-1)

DUPLEX OPERATION

Duplex (or "Full Duplex") operation refers to communications between two points in both directions simultaneously. (FM 24-1)

ELECTROMAGNETIC COMPATIBILITY The ability of C-E equipments, subsystems, and systems to operate in their intended operational environments without suffering or causing unacceptable degradation because of unintentional electromagnetic radiation or response. (FM 24-1)

ELECTRONIC COUNTER~COUNTERMEASURES That division of electronic warfare involving actions taken to insure friendly effective use of the electromagnetic spectrum. (FM 24-1)

ELECTRONIC COUNTERMEASURES That major subdivision of electronic warfare involving actions taken to prevent or reduce the effectiveness of enemy equipment and tactics employing or affected by electromagnetic radiations, and to exploit the use by the enemy of such radiations. (FM 24-1)

ELECTRONIC DECEPTION

The deliberate radiation, re-radiation, alteration, absorption or reflection of electromagnetic energy in a manner intended to mislead in enemy in the interpretation or use of information received by his electronic systems. There are two categories of deception: MANIPULATIVE and IMITATIVE. (FM 24-1)

ELECTRONIC INTELLIGENCE

The intelligence information product of activities engaged in the collection and processing, for subsequent intelligence purposes, of foreign, noncommunications, electromagnetic raditions emanating from other than nuclear detonations and radioactive sources. (FM 24-1)

ELECTRONIC JAMMING

The deliberate radiation, re-radiation, or reflection of electromagnetic energy with the object of impairing the use of electronic devices, equipment or systems being used by an enemy. (FM 24-1)

ELECTRONIC WARFARE

That division of military use of electronics involving actions taken to prevent or reduce an effective use by an enemy of radiated electromagnetic energy, and actions taken to insure our own effective use of radiated electromagnetic energy. Electronic warfare consists of Electronic Countermeasures (ECM), Electronic Counter-countermeasures (ECCM), and Electronic Warfare Support Measures (ESM). (FM 24-1)

MEASURES

ELECTRONIC WARFARE SUPPORT That division of EW involving actions taken to search for, intercept, locate, record, and analyze radiated electromagnetic energy, for the purpose of exploiting such radiations in support of military operations. Thus, ESM provides a source of EW information required to conduct ECM, ECCM, Threat Detection, Warning, Advoidance, Target Acquisition and Homing. (FM 24-1)

FACSIMILE

A system of telecommunications for the transmission of fixed images with a view to their reception in a permanent form. (FM 24-1)

FREQUENCY ASSIGNMENT

The process of designating a radio frequency for use at a specific station or by a specific military unit under specified conditions of operation. (FM 24-1)

GROUND WAVE

In propagation, that portion of the transmitted radio wave that travels near the surface of the earth. (FM 24-1)

HALF-DUPLEX

The capability of operating in either direction, but not in both directions simultaneously. It is also called "SIMPLEX". (FM 24-1)

IMITATIVE ELECTRONIC DECEPTION

The intrusion on the channels of the enemy and the introduction of matter in imitation of his own for the purpose of deceiving or confusing him. (FM 24-1)

INTERC EPTION

The act of searching for and listening to and/or recording communications and electronic transmissions for the purpose of obtaining intelligence. (FM 24-1)

INTERFACE

A point common to two or more systems or other entities across which useful information flow takes place. (FM 24-1)

INTERFERENCE

Any electrical disturbance which causes undesirable responses in electronic equipment (FM 24-1)

LASER

A device that utilizes the natural oscillations of atoms for amplifying or generating electromagnetic waves in the region of the spectrum from the ultraviolet to the far-infrared, including the visible region. (FM 24-1)

LIGHT ANTIARMOR WEAPON

The M72A2 is a close-in, lightweight, smooth-bore, percussion-fired antiarmor weapon which is designed to give the individual infantryman the capability of defeating armored vehicles. (FM 24-1)

LINK

The basic component of an circuit which assures a direct connection between two units. (See ROUTE)

LOCAL LOOP

A circuit connecting an end instrument to a switching facility or distribution point. (FM 24-1)

MANIPULATIVE ELECTRONIC

DECEPTION

The use of friendly electromagnetic radiations so as to falsify the information which a foreign nation can obtain from their analysis. (FM 24-1)

MANUAL CENTRAL OFFICE

A switch in which the lines are connected to a switchboard and interconnections are controlled by an operator. (FM 24-1)

MESSAGE

A demand placed on the communications system which contains some information to be transmitted along a route from one unit to another.

MIJI REPORT

A report to a higher headquarters of an incident of interference in the reception of radio signals. (FM 24-1)

MINIMIZE

A condition wherein normal messages and telephone traffic are drastically reduced, in order that messages connected with an actual or simulated emergency will not be delayed. (FM 24-1)

MULTI-AXIS

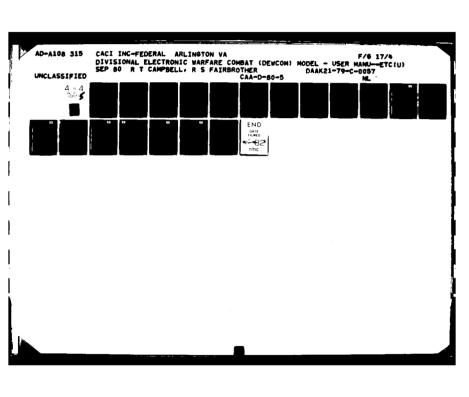
More than one line along which communications takes place. (FM 24-1)

MULTI-MEANS

More than one method or system over which a message can be transmitted. (FM 24-1)

MULTIPLEX

The simultaneous use of a number of channels on a single circuit. (FM 24-1)



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NET

An entire communications network consisting of one or more circuits.

NET CONTROL STATION

A station designated to control traffic and enforce circuit discipline within a given net. (FM 24-1)

NETWORK

An organization of stations capable of intercommunication but not necessarily on the same channel. (FM 24-1)

NODE

An end point of a link. It may also be a switching point for messages and is co-located with a unit.

OPERATION ORDER

A directive, usually formal, issued by the commander to subordinate commanders for the purpose of effecting the coordinated execution of an operation. (FM 24-1)

PRECEDENCE

A designation, assigned to a message by the originator, to indicate to communications per sonnel the relative order of handling and to the addressee the order in which the message is to be noted. (FM 24-1)

RADIO DIRECTION FINDING

Radio locations in which only the direction of a station is determined by means of its emission. Since this technique can be used against all electronic emitters, it is sometimes simply referred to as direction finding. (FM 24-1)

RADIO LISTENING SILENCE

Designated radio stations are instructed to monitor their receivers for incoming traffic but not to transmit for a specified period or until further ordered. (FM 24-1)

RADIO RELAY SYSTEM

A radio transmission system in which the signals are received and transmitted from point to point by intermediate radio stations. This system, normally used in conjunction with carrier equipment, provides channels for both voice and teletypewriter operations. (FM 24-1)

RADIO SILENCE

A period during which all or certain radio equipment capable of radiation is kept inoperative. (FM 24-1)

RADIO TELETYPEWRITER

The system of communication by teletypewriter over radio circuits. (FM 24-1)

RADIO WIRE INTEGRATION

The interconnection of wire circuits with radio facilities. (FM 24-1)

READABILITY

The ability to be understood, i.e., the readability of signals sent by any means of telecommunications. (FM 24-1)

RETRANSMISSION

Employment of a radio communication set for the purpose of rebroadcasting a message on a different frequency simultaneously with the original broadcast by means of an electrically operated linkage device between the receiver and transmitter of the set. (FM 24-1)

ROUTE

A sequence of links over which messages can be transmitted. It is dynamically selected as a function of the type of message to be transmitted and as a function of the characteristics of the links. (See LINK)

ROUTING

The process of determining and prescribing the path or method to be used in forwarding messages. (FM 24-1)

SIGNAL INTELLIGENCE

The final produce resulting from collection, evaluation, analysis, integration, and interpretation of information gathered from hostile electronic emitters. It includes Communications Intelligence and Electronic Intelligency and is used in determining enemy Order of Battle and planning of future operations.

SOLE-USER CIRCUIT

A circuit from one subscriber to another subscriber on a fixed path. (FM 24-1)

SPOT JAMMING

The jamming of a specific channel or frequency. (FM 24-1)

SWITCHBOARD

An apparatus on which the various circuits from subscribers and other switchboards are ter minated to enable communications either between two subscribers on the same switchboard or between subscribers on different switchboards. (FM 24-1)

TACTICAL COMMUNICATIONS

Communications provided by, or under the operational control of, commanders of combat forces, combat troops, combat support troops, or forces assigned a combat service support mission. (FM 24-1)

TACTICAL OPERATIONS CENTER A facility from which selected special or general staff members assist in the direction, coordination, and control of current combat operations. (FM 24-1)

TANDEM SWITCH

A switch used primarily as a switching point for traffic between other switches. (FM 24-1)

TAPE RELAY

A method of receiving and retransmitting messages in tape form. (FM 24-1)

TELECOMMUNICATIONS CENTER

An agency charged with the responsibility for acceptance, preparation for transmission, receipt, duplication and delivery of messages. (FM 24-1)

TEXT

That part of a message which contains the thought or idea which the originator desires to be communicated. (FM 24-1)

TRUNK CIRCUIT

A circuit directly connecting two distant central offices. (FM 24-1)

UNIT

A concentration of equipment and personnel on the battlefield. Units move on the battlefield, engage in combat, communicate with each other and apply Electronic Warfare Support Measures (ESM), Electronic Countermeasures (ECCM), and Electronic Counter-countermeasures (ECCM) to enemy communications.

VOICE FREQUENCY

Any frequency within the part of the audio frequency range essential for the transmission of speech of commercial quality, i.e., 300-3000 Hz. (FM 24-1)

APPENDIX B

GLOSSARY OF ABBREVIATIONS

ADPS Automatic Data Processing System AIG Address Indicating Group AM Amplitude Modulation ARDF Airborne Radio Direction Finding **ASA** Army Security Agency **ATSE** Army Security Agency Tactical Support Element CAS Close Air Support C-E Communications-Electronics CEOI Communications Electronics Operating Instructions CFA Covering Force Area CNCE Communications Nodal Control Element COMINT Communication Intelligence CP Command Post CSCE Communications System Control Element CW Continuous Wave 62 Command and Control C3 Command, Control, and Communications DEWC OM Divisional Electronic Warfare Combat DF Direction Findings EAC Echelons Above Corps ECCM Electronic Counter-Countermeasures ECM Electronics Countermeasures EIM Extended Interface Meeting ELINT Electronic Intelligence EMC Electomagnetic Compatibility EMC ON Emission Control **ESM** Electronic Warfare Support Measures EW Electronic Warfare EWC O Electronic Warfare Cryptologic Officer FAX Facsimile FEBA Forward Edge of the Battle Area

Frequency Modulation

FM

HF High Frequency

HQ Headquarters

IAW In Accordance With

ICD Imitative Communication Deception

JTF Joint Task Force

LAW Light Antiarmor Weapon

LOS Line of Sight

MED Manipulative Electronic Deception

MIJI Meaconing, Intrusion, Jamming, Interference

MRD Motorized Rifle Division
MRR Motorized Rifle Regiment
MTBF Mean Time Between Failures

MTTR Mean Time to Repair

NBC Nuclear, Biological and Chemical

NCS Net Control Station
OPSEC Operations Security
RATT Radio Teletypewriter
RDF Radio Direction Finding
RWI Radio Wire Integration

SAG Study Advisory Group

SDD Software Design Document

SDDL Software Design and Documentation Language

SEAD Suppression of Enemy Air Defense

SIGINT Signal Intelligence

TCC Tactical Operations Center

UHF Ultra High Frequency
VHF Very High Frequency

VT Variable Time

APPENDIX C REFERENCES

- 1. Source listing of COMMEL II.5 simulator with a variable name dictionary and subroutine cross-reference list.
- 2. Source listing of Tactical Preprocessor for COMMEL II.5 with a variable name dictionary.
- 3. Source listing of Communications Preprocessor for COMMEL II.5 with a variable name dictionary.
- 4. Source listing of Subtactical Message Preprocessor for COMMEL II.5 with a variable name dictionary.
- 5. Input and output for benchmark run of COMMEL II.5 Alpha Offense with force ratio = 1.6 (tactical only; perfect communications; no EW).
- 6. COMMEL II.5 Users Manual

Volume I - Model Overview

Volume II - Input Data Preparation

Volume III - Appendices

Volume IV - Blank Data Forms

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Annex A - Description of the COMMEL Model

Annex B - COMMEL Model Program Documentation (6 volumes)

Annex C - COMMEL Model Users Guide

Annex D - Sensitivity Analysis

Annex E - Use of the COMMEL Model for Parametric Evaluation of Communications Problems

Supplement to Annex C, Appendix 2 - Facsimilies of Tactical Data Input Forms.

15. The Signal Corps Ground Combat Simulator

Final Report

Annex I: The Signal Corps Ground Combat Simulator

 $Volume\ I$ - Theory, Organizatization, and Structure of the

Model (2 parts)

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Volume III - Exercise Goldleaf

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- 29. Parametric Terrain and Line of Sight Modelling in the STAR Combat Model, James K. Hartman, NPS 55-79-018, August 1979.

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